THE GENESEE FARMER

Vol. XIV. ROCHESTER, N. Y., NOVEMBER, 1853. No. XI.

THE AMERICAN SOCIETY FOR THE PROMOTION OF AGRICULTURAL SCIENCE.

If there is any value in a knowledge of the true principles of agriculture, and if this knowledge is worthy of cultivation by American farmers, we respectfully submit the question to them, Whether it is not best to make an organized effort in behalf of agricultural science!

Every observing, intelligent member of our present agricultural societies, knows that they do next to nothing to encourage scientific investigations of any kind. Their annual shows bring the masses together once a year to see the bull Apis, as the Egyptians brought their children to smell his breath, believing that the breath of the sacred animal would inspire them with all useful knowledge, extending even to the foretelling of future events. For this and other kindred practices, the ancient Egyptians are sometimes pitied for their idolatry and blind superstitions; but when we compare their very limited advantages with ours, the cattle exhibitions of this age appear less instructive than the Apis festivals of the Egyptian husbandmen, which lasted seven days in each year, and were conducted by the priests with vastly more pomp, care, and unction, than characterize our poor imitations. Long before the time of Abraham, the valley of the Nile was well cultivated, so that Joseph found no difficulty in laying up grain enough to feed the indefinite millions seven years, without an intervening harvest. This historical incident communicates a volume of instruction. Such extraordinary providence could be possible only among a people of wonderful industry, self-denial, the greatest of all virtues, and far-reaching intelligence. Not only the improvident Hebrews, but all the neighboring tribes and nations, were often forced to beg their bread of the more educated and civilized farmers of Egypt. The latter were the first land surveyors, and the earliest cultivators of astronomy among mankind. Their farms were frequently, and for months together, under water, by the annual overflow of the Nile; and they set up "land-marks," looking to the stars for cardinal points, and thus united the rudiments of tillage, surveying, engineering, and astronomy, prompted by that necessity which is the mother of invention. In every thing that pertains to irrigation and drainage, the Egyptians were far in advance of us. We, short-sighted impoverishers of a virgin soil, employ canals for commercial purposes alone; they used them not only to convey their crops to Thebes, and other great markets, but to bring all needful manure from their populous cities, and distribute it equally in every cubic foot, cubic inch, and cubic line of soil, dissolved in water. Thus fertilized, their lands never required rest from the production of wheat a single year, for indefinite centuries.

At this time, the State of New York has a thousand miles of canals, and two thousand one hundred miles of railways, in successful operation. Science would double the

intrinsic and productive value of every man's farm in five years, if it were only encouraged as it ought to be. New York farmers enjoy great facilities for the economical improvement of their meadows, pastures, and tilled fields. They lack nothing but a little attainable knowledge—knowledge to be derived from original researches yet to be made. They are invited, most respectfully but earnestly, to take a single step in advance of their present position. As in the acquisition of property, so in the increase of knowledge, they can keep all their present stock, even to the extreme of prejudices, and then learn to make a far wiser and more profitable use of the manifold physical elements which Nature has placed within their reach. When Providence sent the farmers of the Nile a full supply of water, they wisely stored up all that they needed for future use. The same Providence drops from the clouds an average of two hundred pounds of water upon every square foot of soil in the United States; and who among all our five millions of owners and cultivators of land, stores up that excess of rain water which does not soak immediately into the ground, but goes to form freshets in creeks and rivers? Why should American farmers appear to despise the practical science of agricultural engineering, and thereby deprive their crops of both irrigation and manure, when and where they are most needed? Weigh well the facts that almost every square yard of ground receives a ton of water every year, and that a little science communicated to the masses would suffice to add four fold to the natural benefits of this "fatness," which might abound every where in this country as it does in the valley of the Nile. The sources of the Nile, the Mountains of the Moon, contain no elements of fertility that do not exist in equal abundance in the mountains of New England and New York, Pennsylvania and Virginia. The rain water of Africa is no richer than the rain water of America. By uniting the careful study of astronomy, surveying, engineering, and other sciences, with practical agriculture, the cultivators of the soil in the rainless valley of Egypt made their country the granary of the world for thousands of years. Even now they export from ten to twenty million bushels of wheat a year, to say nothing of cotton and other staples. The history of agriculture is full of instruction, and ought to be read far more than it is. In eastern Asia, an unwise system of tillage increased the area of barrenness on all sides of every natural desert.

When will Americans understand that it is the wise use of natural advantages, not their reckless abuse, which makes a great, enduring, and powerful nation? Science will confer upon agriculturists the ability to draw the elements of grain from the earth to the depth of fifty and one hundred feet, with a liberal profit. As this statement may startle some of our unprogressive readers, who can not possibly discover sixty pounds of wheat in twenty of guano, we earnestly desire to test in wheat and corn fields, in meadows and pastures, the soundness of our reasoning on this subject. Trust-worthy experiments in agriculture cost money; and their expenses should be borne by the small contributions of many associates. We wish to find one thousand men who feel able and willing to give a dollar a year to promote agricultural science. Many years ago, after receiving the best chemical education this country afforded, we imported chemical apparatus from Europe, and prosecuted a series of researches, some of which are thus noticed in the September number of the *American Farmer*, in an extended and valuable article on wheat culture:

Here, for the benefit of our numerous new subscribers, it may be opportune to the occasion to copy a few paragraphs from Dr. DANIEL LEE's admirable articles, which originally appeared in his excellent journal, the *Genesee Farmer*. We give them again, because of the reliableness of the authority, and because of the important facts they detail. Dr. LEE says:

"There are 7.7 pounds of ash in 100 pounds of dry clover. If this crop be taken from a field for a number of years, without making restitution, it will be found quite exhausting, notwithstanding the power of clover to draw its organic nourishment from the atmosphere. An acre of stout clover, when perfectly dry, has been known to weigh 3,694 pounds, containing 284 pounds of ash. This is some 80 pounds more than is removed from an acre in a fair crop of wheat. It is useful to study

the mineral elements of this plant in connection with those of wheat. In 284 pounds of the ash of clover there are of

Phosphoric acid,	18.00 pounds.
Sulphuric acid,	7.00 "
Chlorine,	7.00 "
Lime,	70.00 "
Magnesia,	18.00 "
Potash and soda,	77.00 "
Silica,	15.00 "
Oxide of iron and alumina,	00.90 "
Carbonic acid,	71.00 "
Total,	283.90 pounds.

"Throwing out of the account the 71 pounds of carbonic acid, we have 213 pounds of earthy matter. An acre of *wheat* needs, to feed both seed and straw, 17 pounds of phosphoric acid. An acre of good clover will furnish 18 pounds. That quantity of wheat needs 2 pounds of sulphuric acid. An acre of clover will supply 7 pounds. The former needs 1 pound of chlorine—a substance that forms 60 per cent. in common salt—clover will furnish 7 pounds. Wheat (an acre) needs 16 pounds of lime. Clover will supply 70 pounds. Wheat needs 13 pounds of magnesia. Clover will supply 18 pounds. Wheat needs 24 pounds of potash and soda (with an excess). Clover will furnish 77 pounds. Wheat needs 121 pounds of silica, of which clover can only furnish 15 pounds. Except silica, or sand, it will be seen that an acre of good clover yields all the several minerals needed by a crop of wheat; and some of the more valuable ones, in large excess. In its organic elements it is not less abundant.

	Carbon.	*Oxygen.*	*Hydrogen.*	*Nitrogen.*
Clover has in 3,693 pounds,	1,750	1,396	185	78
Wheat crop,	1,487	1,262	171	32

"It is particularly worthy of note, that clover yields more than twice as much nitrogen as both the wheat and straw require. It is proper to state, that to make 3,693 pounds of perfectly dry clover, one must have 4,675 pounds of clover hay. But in plowing in clover for wheat, we gain all the stubble and roots, in addition to what the scythe clips in mowing."

The practical experience of wheat growers justify the opinion, that, as a preparation for a wheat crop, there is nothing superior to the turning in of a crop of clover. Why such is the fact, we shall now proceed to show, by constructing a comparative table, showing the constitution of clover and wheat, and as illustrated by the preceding extracts from Dr. LEE's admirable paper. The quantities of each is the product of an acre, good crops being presumed to have been grown in each instance.

After studying the soils and crops of other sections six years, we are about to resume our researches in Western New York, with increased confidence in its incomparable agricultural resources. Talking, and writing, signify but little; and we beg the co-operation of every friend of the farming interest that *results in practice*, to be seen by all men, may confirm the propriety of investigating the laws of nature that govern the growth of all agricultural plants, and the wisdom of being able to understand and obey these laws, which are the enactments of the Creator.

In the young men of Western New York, we recognise the best material in the world for the formation of a society to promote agricultural sciences. If these gentlemen are unwilling to identify themselves with a movement of this kind, we shall regard it as hopeless to attempt any thing elsewhere of an intellectual character, for the elevation of the agricultural profession. No young man can ever regret that he has studied and mastered the sciences of tillage and husbandry. No matter what position in life he may attain to in the brilliant future of this Republic, his profound knowledge of the laws of agriculture and horticulture will secure to him the respect of all whose good opinion is worth having. To a youth of honorable ambition, what is a dollar a year? After the society is organized, it will determine the investigations to be undertaken, the length of time they are to be prosecuted, and the reports to be made for the instruction of each member whose name will stand recorded as one of the first patrons of agricultural science in the United States. No money is to be paid until one thousand names are obtained, and a treasurer duly appointed to receive the funds of the association. If it is not possible to raise a thousand dollars a year to promote agricultural science in the United States, the historical fact shall be recorded to the enduring disgrace of the age in which we live. There is scarcely a county in the Union that does not cheerfully sup-

port an excess of doctors, lawyers, priests, and merchants. Why, then, can they not encourage the scientific development of the resources of American soil? To the proper investigation of these invaluable resources, there is not so much as one man in the whole Republic who devotes his time and talents. Considering how vast is this landed interest, is it not a fact as extraordinary as it is lamentable, that not a single person in our thirty-one states and six territories should be employed to prove, by actual and reliable experiments, the capabilities of the climates and arable lands of this continent? Without reward, or the hope of reward, we gave months of labor, to say nothing of costly chemicals consumed, to show the relation that clover bears to wheat, and both to the soils of Western New York. These researches were incomplete, and we are anxious to resume them. For our time we shall charge nothing; but we are not rich enough to meet all the incidental expenses of the experiments and analyses that ought to be made. An association of men who believe in the study of Nature's laws, which, being the laws of GOD, form the basis of all progress and all true wisdom, can easily supply the small sum needed to prosecute important agricultural researches to satisfactory results. To learn how to interrogate Nature requires a great deal of preliminary study. Only a part of the questions put to her by agricultural chemists were properly propounded. They did not fully comprehend the wants of practical farmers; and they failed to give their labors the right direction. Now is the time to profit by past errors and experience in scientific researches, just as a skilful farmer profits in the latter years of his life by the errors and experience which observation and his life have given him. We honor agriculture as a most useful art; but we submit that *art* alone could never have shown as *science* has done the intimate relation that subsists between a clover plant and a wheat plant. We have now one hundred and nine acres in the District of Columbia dedicated to experimental purposes, and hope to see science and practice united in all the States, in the most successful manner. To achieve this glorious consummation, agricultural science must receive far more encouragement from farmers than they have yet bestowed upon it. Science needs cultivation from year to year, just as wheat and corn are cultivated, to obtain a liberal harvest of useful knowledge. Neither wheat nor wisdom is grown and enjoyed without labor.

MAKING, SAVING, AND APPLICATION OF MANURES.

THE making, saving, and application of manures I have found to be the most difficult thing connected with tillage husbandry. To obtain some information in relation to this and other matters, I have ventured to trespass on your pastime. Years ago I was in the habit of reading the *Cultivator*, edited by Judge BUEL, of Albany. The Judge strongly advocated the following system with respect to manures, as a general thing: They were to be hauled from the yard in a green state, and applied to hoed crops on green sward, spread on the surface and plowed under. BUEL's argument was of this nature: That manure should never be suffered to rot in the yard, or wherever it was deposited, because the action of the sun and rain changed portions of it into gas, which escaped into the atmosphere, and was thereby lost to the plants which it should feed. He also directed to plow the manure under for the same reason. This looked to me like a correct theory, and I put it in practice. My soil is a sandy loam, with usually a pretty tough sod, and I found, after plowing under my manure, that unless we had a very hot season, the crop planted over it did not receive any, or little benefit from the manure. I changed my course. I plow my sod ground first, then draw my manure out green, and spread it on the top and harrow it in as well as I can, leaving, however, considerable on the surface, after the manner of your Essex correspondent in the July number. The result has been, a better crop of corn or potatoes, and the succeeding sown crop full as good. But I am not satisfied that this is correct. I always fear that I lose considerable manure by evaporation, as I have found it impossible to harrow under the long parts of green manure. Does this evaporation question apply to top dressings for meadows? If you will give us

your views on these points, although they may have been often expressed, it will gratify many of the readers of your valuable journal.

Connected with this subject, I wish to inquire as to the best way of constructing manure tanks. How can a yard and stables be so arranged as to save all the urine and liquids made by rains? We can think of ways enough to remove liquid manure to the field, but how can it be distributed there? Former numbers of the *Farmer* have told us of a method being practised in England, and likewise by Mr. CALVERT, of Maryland, to do this with pipes and steam engines; but this will be too expensive, I think, to be of general application on small farms. I wish to have a barnyard with a hard, smooth, water-tight bottom. Can this be done with plank? If not, how can it be attained?

What has become of the United States Agricultural Society and its Journal? I intended to become a member and have the Journal; but they forgot that in taking away the main-spring the motive power was lost.

I am not the only one among your subscribers who rejoices that you have struck out boldly on the subject of agriculture, and taken higher ground than is the wont of others. This course will necessarilly bring you in contact with watchful and jealous men; but the truth will bear its weight and succeed in the long run. R. M. ORMSBEE.—*Greenfield, Saratoga county, N. Y.*

The next great improvement in agriculture will be achieved in the making, saving, and application of manures. To realize important benefits in this direction, no new discovery is necessary, but simply the wise use of scientific principles already well known. No facts in agriculture are better understood by intelligent cultivators than that every element in the dung and urine of domestic animals is derived from their food, and that from the earth and atmosphere. Strictly speaking, no one is obliged to "make" manure; for GOD has made an almost unlimited quantity of the food of plants, which is all the manure they ever need. But to bring this food from where it is, to where the naturally poor or impoverished soil requires it, is a work which demands thought, skill, and capital. We are confident that a great deal of honest hard labor is thrown away in the mismanagement of manures, arising from a want of knowledge of the relative value of their constituent elements. For years have we seen farmers pay a dollar a load for trash in the city of Washington sold as manure, which really was not worth hauling home if given to them, while nightsoil and the dung of horses and swine fed on grain, on their own premises, were allowed to be washed into creeks and lost. None but those who have traveled extensively, and paid particular attention to this department of farm economy, have any adequate idea of the prodigious loss that the country sustains by the wasting of the raw material of its great agricultural staples. It is wasted every where—in woods, swamps, ditches, barnyards, under stable floors, in yards, about hay stacks, in meadows, in fields after it is nominally spread, around hog pens, and in the vaults of privies.

If farmers are willing to improve at all, as we believe many are, the first thing to be done is to avoid this sorry wastfulness of the cream of all fertile land. Provide a water-tight, or a well-cemented or clayed reservoir near your stable, and others in your stock yards, to hold manure of every kind. A basin can be rendered impervious to water by simply pounding good, dry clay, hard and smooth over its bottom and sides. It is best to pound the earth before the clay is applied to make it close, compact, and solid. The basin should have no sharp angles, and its depth, length and breadth, may be governed by the stock kept, and the quantity of manure to be stored therein.

Barnyard liquids are not apt to be very concentrated; and how to convey from 500 to 1000 tons of such to the fields that need manure is a matter which we have found of some practical importance. In Belgium and Holland watering carts, each drawn by a horse or mule, have been used for ages to distribute diluted urine and liquified solids over meadows and fields about to be tilled. This system combines manuring and irrigation, and tells powerfully on all crops; but it is quite expensive, as only a little manure is dissolved in a hogshead of water hauled into the field. Before we proceed to indi-

cate a much cheaper plan for conveying the food of plants back into the impoverished soil, whence so much has been extracted, we invite attention to the following letter from a young farmer whose enterprise and intelligence do honor to his profession :

In compliance with a solicitation in the July number of the *Farmer* for the views of correspondents as to the best pipe for conducting water, I give my experience. I have a pipe in operation made of two-inch pipe drain tile surrounded with water lime cement, that brings to my yard the water of a spring one hundred rods distant. On the bottom of the ditch, two and a half feet in depth, I spread with a plasterer's trowel cement one-half inch in depth, and four inches in width, immediately placing on this foundation one or two tiles, and covering them slightly with the cement. The cement on the bottom must be laid no faster than the tiles, and in this way two men, one to make the mortar while the other places the pipe, can lay thirty rods per day. If it is required to elevate the water many feet, more cement must be used, and more time intervene previous to letting the water in. In durability this pipe may compare with lead, and wholly cement, and is far preferable for its size, which may be four or six inches, and as much larger as tiles can be made. In economy it is also preferable, costing much less than any other conduit of the same dimensions. Two-inch sole tiles are $10 per thousand pieces, and thirteen will lay one rod, costing thirteen cents; and estimating the lime at seven cents, the expense for materials is twenty cents a rod. If the tiles were glaized, which I think might be done, cement only would be required around the joints. Good tiles of various forms and sizes are now manufactured by A. S. Cray, Palmyra, N. Y. H. J. Foster—*Palmyra, N. Y.*

Well burnt tile pipe put down like pump-logs and cemented at the joints will convey liquid manure into near or distant fields at one-tenth the cost of carting it. A few men working by hand a force pump in a common fire engine, drive water in leather or gutta percha hose over the roofs of six story houses; one or two horses working a force pump in a barnyard would lift one hundred tons of water fifty feet or more high to give a head for its distribution through cement pipes over a distant field, while they could haul there on wheels eighteen tons of water. By flattening the nozzle of the pipe from which the water issues through the hose for distribution, it will spread out like a fan, and fall over the ground in drops in a shower, having a little more ammonia, carbonic acid, and salts than rain water naturally bring to the earth. Manure applied in gentle and timely showers has many very important advantages, which will be fully explained in future numbers of this Journal.

AGRICULTURAL PROGRESS IN NEW YORK.

We cannot commend the slow progress of agricultural improvement in New York, because the evidence of unskillful husbandry greatly preponderates when we hold an even balance between good and bad farming. The best cultivated districts in Great Britain, France, Belgium, and Holland, are those that produce the most manure, and keep the most stock for that purpose. The extensive turnip culture of England looks directly to this object. The densest peopled nation in Europe (Belgium), unlike the State of New York, that imports so much meat to supply the consumption of its cities, exports a large surplus of fat cattle to London. Belgium has less than half the area under cultivation, according to its population, that New York has, yet the former has both grain and provisions of all kinds to send abroad, after supplying home consumption. At the last census, New York returned 12,408,968 acres of improved land; being within a very small fraction just four acres to each man, woman, and child within its limits. Belgium has a fraction over one arable acre to each inhabitant. Speaking of "the agricultural produce and practice" of that kingdom, Mr. McCulloch says: "Corn (wheat), flax, hemp, and *timber*, constitute the most important materials of the agricultural

wealth of Belgium. The soil, *artificially* enriched, produces more than double the quantity of corn required for the consumption of its inhabitants." The same reliable author states that the average of fat cattle sold in England for fourteen years by Belgian farmers, was 898,076 head per annum. With them, the urine of a cow is worth ten dollars a year to make grain and meat for exportation. London, Liverpool, and Paris markets govern the price of breadstuffs and provisions to a large extent in the State of New York, not less than at Brussels. With these facts before us, let us see what is the substantial progress of agriculture in the Empire State, according to the best lights of official statistics.

From 1840 to 1845, the number of sheep in the State was increased about 25 per cent.; and so prosperous did sheep husbandry appear to the editor of the *Wool Grower* in 1849, that he estimated the whole number of sheep in the United States in June, 1850, at 30,000,000, yielding two and three-quarters pounds of wool a head. When the census was taken, instead of 30,000,000 sheep, the official figures were 21,620,482; and New York, in place of a continued increase, as was expected, had reduced her flocks from 6,443,855, to 3,453,241—a reduction of nearly one-half in five years.

Much has been said about flax culture in this and other States; and a learned Professor from London was invited to lecture on the subject at the recent fair in Saratoga. In 1845, the flax crop of this State was 2,897,062 pounds; in 1850, it was reduced to 940,577 pounds—a falling off of two-thirds in five years!

With fewer acres of land under improvement by half a million, the farmers of this State were able to keep 1,584,344 hogs in 1845; while in 1850 their partially impoverished fields kept only 1,018,252—a reduction of 34 per cent. in five years, almost equalling that in sheep.

In 1845, their better pastures and meadows kept 2,072,330 head of neat cattle; in 1850, their poorer pastures and poorer meadows, notwithstanding they had nearly three millions less sheep to summer and winter, yielded sustenance to only 1,877,639 head of cattle. And to cap the climax of New York *progress* in husbandry, the number of horses kept was reduced from 505,155, in 1845, to 447,014, in 1850; and milch cows, from 999,490 to 931,324.

Have the State and County Agricultural Societies in this great commonwealth duly investigated the causes of this alarming decrease in the machinery for making manure! We suspect that they have turned away from the profound study of the science of statistics, to enjoy the light and trivial amusements of common cattle shows. Whether the cultivators of the earth draw their increased crops of wheat and corn, oats and barley, from the natural resources of the subsoil, or from manure honestly applied to the land, who among all the promoters of agricultural knowledge in New York has ever taken the least pains to inquire! Tell us plainly, kind reader, what sort of *progress* those farmers are making who do not purchase imported manure, nor the raw material to form their crops, and do not keep stock enough to replace a tithe of the elements of fertility extracted from their cultivated fields!

Can a cubic foot of any earth in these fields contain more than a quite limited quantity of the precise atoms that go to organize wheat and corn, grass and potatoes! Why are the dung and urine of a sheep worth a dollar a year in Belgium, and scarcely ten cents in New York! Because in Belgium no one is allowed to consume and waste the natural resources of the land that both feeds and clothes an intelligent and moral people. They use the soil, not abuse it; while we both use and *abuse* it.

If it be possible in the moral government of society, and the necessary connection of one generation with the other, for the first and the parent to wrong the second and the offspring, then this generation is guilty of the crime of robbing the land of its elements of bread and meat, and wasting them in cities and elsewhere, which elements GOD placed in the virgin soils of America for the equal use and benefit of all generations in

all coming time. The natural fertility of soils and subsoils being the gift of our common Creator, to impair said fertility for a narrow, mercenary purpose, is an offence against the public safety, the highest interest of all, which ought to be punished with greater severity than treason. What other interest can a nation have superior to the continued fruitfulness of the land, which so obviously supports all its citizens?

Twenty millions of dollars can not, by any known process, make good the damage done to the farming lands of New York in the year 1853, by its three million three hundred thousand inhabitants. If this statement be true, and we invite the closest criticism to show the error if there be one, what ought the writer, who was born and reared in the State, to say of its agricultural progress?

Why should Monroe county, which raises more grain than any other in the United States, diminish its sheep 61,655, or from 173,952 to 112,297, in five years? Why should it diminish its swine 17,292 head in the same length of time? Why reduce its number of milch kine 5,381? Why reduce its number of horses 3,235? These reductions were made from 1845 to 1850, while the acres of improved land in the county were increased in the mean time 21,092½.

These trustworthy statistics, and many more at our command, are pregnant with meaning; but there is not room in a single number of the *Farmer* to discuss them in all their bearings. We always restrain our own reasonings, that more reliable facts relating to agriculture may be condensed into this small paper than are found in any other. Having the facts before them, most persons will draw the proper inferences therefrom.

AGRICULTURAL STATISTICS OF THE STATE OF NEW YORK IN 1845.

The whole number of acres of improved land in the State is 11,737,276: of which 1,013,665 is devoted to the production of wheat; 1,026,915 to that of oats; 595,135 to that of corn; 255,762 to that of potatoes; 317,099 to that of rye; 192,504 to that of barley; 117,379 to that of peas; 16,232 to that of beans; 255,496 to that of buckwheat; 15,322 to that of turnips; and 46,089 to that of flax; wheat and oats being the great agricultural staples of the State: corn and rye holding the next place; potatoes and buckwheat, in about equal proportion, the next; and barley, peas, flax, beans, and turnips, following in the order in which they are here named; the least number of acres being devoted to the culture of the turnip.

The western and northern portions of the State are best adapted to the cultivation of wheat, potatoes, oats, and rye; while the southern and eastern portions seem most favorable to corn, barley, peas, beans, turnips, and flax. The middle counties afford the best encouragement to the raising of cattle.

Of the 1,013,665 acres employed in the raising of wheat, the number harvested during the year is reported at 958,234, yielding an aggregate of 13,391,770 bushels—exceeding by 1,438,263 bushels the amount raised in 1840, and averaging a fraction under 14 bushels to the acre. In the county of Monroe, the average yield is 19½ bushels; in the county of Kings, 19; in each of the counties of Orleans and Niagara, 18; in the county of Clinton, 17½; in Genesee county, 16½; in each of the counties of Cayuga, Ontario, Livingston, and Franklin, 16; and in each of the counties of Onondaga, Richmond, Seneca, Warren, and Wyoming, 15. In two of the outer wards of Brooklyn, the average yield was 24 bushels to the acre; in the town of Wheatland, Monroe county, 22 bushels; and in Sweden, same county, 21.

From the 1,026,915 acres devoted to the production of oats, the aggregate number of bushels harvested during the year is stated at 26,323,051—exceeding by 5,594,313

the quantity raised in 1840, and averaging nearly 26 bushels to the acre. In the counties of Seneca and Kings, the average exceeded 35; in Monroe and Ontario, 32; in Onondaga, 31; in each of the counties of Cayuga, Dutchess, and Livingston, 30; in each of the counties of Orleans, Niagara, and Rensselaer, 29; in each of the counties of Chenango, Madison, Oneida, Orange, Wayne, and Yates, 28; and in each or the counties of Chautauque, Clinton, Columbia, Jefferson, Queens, Richmond, Suffolk, and St. Lawrence, 27.

From the 317,099 acres devoted to the production of rye, the aggregate number of bushels harvested during the year is stated at 2,966,322, being 18,591 bushels less than were harvested in 1840, or an average of nearly 9½ bushels to the acre. In the county of Kings, the average product is reported at nearly 20 bushels to the acre; in the county of Richmond, at 14½; in the county of Jefferson, 13½; in each of the counties of Clinton, Orleans, and St. Lawrence, 12; in Chenango, 11½; in each of the counties of Erie, Livingston, Rensselaer, and Wyoming, 11; in each of the counties of Schenectady, Queens, and Essex, 10½; and in each of the counties of Albany, Delaware, Franklin, Fulton, Genesee, Herkimer, Lewis, Monroe, Montgomery, Orange, Warren, and Westchester, 10. In the ninth ward of the city of Brooklyn, 265 bushels were obtained from 16 acres, being an average of 25 bushels to the acre; and an equal average crop was obtained in the town of Gravesend in the same county.

From 595,135 acres planted with corn, the aggregate number of bushels harvested is returned at 14,722,115, being an increase of 3,636,973 over the harvest of 1840, and averaging nearly 25 bushels to the acre. In the county of New York, the average yield was 40; in Kings county, 38½; in Richmond, 35; in Suffolk, 34; in each of the counties of Orange and Westchester, 32; in Rockland, 31; in each of the counties of Monroe and Orleans, 30; in each of the counties of Niagara, Ontario, and Seneca, 29; in each of the counties of Chemung, Chenango, Jefferson, Oneida, Onondaga, Putnam, and Tioga, 27; in each of the counties of Clinton and Wayne, 26½; and in the county of Broome, 26.

From 255,762¾ acres planted with potatoes, the aggregate number of bushels obtained was 23,653,418, or an average of 90 bushels to the acre. In Jefferson and Franklin counties the average yield exceeded 150 bushels; in St. Lawrence, 145; in Clinton and Orleans, 137; in Essex and Genesee, 125; in Washington, 122; in Suffolk and Wayne, 120; in Chautauque, 112; in each of the counties of Kings, Monroe, and Niagara, 110; in each of the counties of Ontario, Cattaraugus, and Cayuga, 105; in Allegany, 89; in Yates, 98; in Seneca, 97; and in each of the counties of Lewis and Queens, 95. In each of the towns of Antwerp and Rutland, in Jefferson county, the average yield per acre was 187 bushels. There has been a falling off of the potato crop of upwards of 6,000,000 bushels since 1840.

From 117,379 acres sown with peas, the aggregate number of bushels raised was 1,761,504, or an average of 15 bushels per acre. In the town of Westchester, Westchester county, upwards of 170 bushels are returned as having been produced from 3¼ acres, averaging 56 bushels per acre. In the county of Kings, the average crop was 35 bushels; in Richmond, 24; in Putnam, Queens, and Wyoming, 20; in Onondaga and Orleans, 19½; in Suffolk, 18; in each of the counties of Genesee, Madison, Montgomery, and Rockland, 17; and in each of the counties of Albany, Allegany, Cayuga, Chautauque, Erie, Livingston, Monroe, Niagara, Oneida, Ontario, Seneca, St. Lawrence, and Steuben, 16.

From 16,232 acres devoted to the raising of beans, the aggregate number of bushels produced was 162,188, or an average of 10 bushels per acre. In the town of Westfield, Richmond county, from 2¾ acres 228½ bushels were produced, being an average of 114 bushels per acre; in the ninth ward of the city of Brooklyn, 1,960 bushels were raised from 19¼ acres, being an average of 100 bushels per acre; in the town of New-

town, Queens county, the average was 91; in the county of Westchester, 20; in the counties of Cayuga and Chautauque, 15 and upwards.

From 192,504 acres sown with barley, the aggregate number of bushels raised during the year preceding is returned at 3,108,705—exceeding by 610,535 bushels the crop of 1840, and averaging 16 bushels per acre. From 11 acres in the county of Kings, 360 bushels were raised, being an average of nearly 33 bushels to the acre. In the county of Schoharie, the average return exceeded 22 bushels to the acre; in the county of Suffolk, 44 bushels; in the county of Richmond, 25; in each of the counties of Onondaga and Westchester, 20; in each of the counties of Madison, Monroe, Niagara, and Ontario, 19; in each of the counties of Cortland, Oneida, and Schenectady, 18; in each of the counties of Cayuga and Chautauque, 17½; and in each of the counties of Alleganv, Chenango, Essex, Franklin, Rensselaer, and Seneca, 17.

From 255,495⅔ acres of buckwheat, the aggregate number of bushels raised was 3,634,679 7/12—exceeding by 1,390,241 bushels the quantity raised in 1840, being an average of upwards of 14 bushels to an acre. In one of the outer wards of New York, 300 bushels were obtained from 8¼ acres, or an average of nearly 38 bushels to the acre. In each of the counties of Onondaga and Ontario, the average was 21; in Genesee, 19; in each of the counties of Cayuga, Kings, Putnam, Richmond, Schenectady, Seneca, and Wayne, 18; in each of the counties of Chemung, Chenango, Clinton, Livingston, Montgomery, Niagara, Tompkins, and Yates, 17; in each of the counties of Albany, Chautauque, Cortland, Queens, Renssalaer, Steuben, Tioga, and Westchester, 16; and in each of the counties of Allegany, Broome, Delaware, Dutchess, Erie, Herkimer, Monroe, Oneida, Orange, Schoharie, St. Lawrence, and Ulster, 15.

From 15,322½ acres devoted to the production of turnips, the aggregate number of bushels raised was 1,350,332, being an average of 88 bushels per acre. In the county of Suffolk, however, the average is as high as 240; and in one town of that county (Riverhead), the average yield was 293 bushels. In Kings county, the average was 197; in each of the counties of Monroe and Queens, 180; in each of the counties of Niagara and Rockland, 155; in Ontario, 148; in Wayne, 146; in Richmond, 142; in each of the counties of Onondaga and St. Lawrence, 140; in Otsego, 135; in Orleans, 126; in Cortland, 125; in Clinton, 122; in Essex, 121; in Cayuga, 120; in Steuben, 115; in each of the counties of Delaware, Oswego, Saratoga, and Schenectady, 110; in each of the counties of Franklin and Jefferson, 108; in each of the counties of Chemung and Montgomery, 107; in each of the counties of Genesee and Seneca, 105; in Chautauque, 104; in Wyoming, 103; in Livingston, 99; in Allegany, 98; in each of the counties of Tioga and Warren, 95; in Washington, 92; and in each of the counties of Cattaraugus, Lewis, and Schoharie, 90.

From 46,089 acres of flax, the average number of pounds produced was 2,897,062½, or an average of 62⅝ pounds to the acre. In the town of Islip, Suffolk county, 120 pounds were produced from one-quarter of an acre; in Poughkeepsie, Dutchess county, 360 pounds from five-eigths of an acre; in the towns of Amenia and Rhinebeck, in the same county, an average of 350 pounds per acre is returned; in Pleasant Valley, 285; and in Clinton, 275. The average product in the county is 237 pounds per acre. In Jefferson county, the average is 190; in Columbia, 187; in each of the counties of Chautauque and Chenango, 180; in each of the counties of Lewis, Queens, and Washington, 175; in each of the counties of Orange and Ulster, 165; in Essex, 164; in each of the counties of Clinton, Cortland, Franklin, Oneida, Putnam, and Rensselaer, 150; in each of the counties of Oswego, Sullivan, and Westchester, 140; in Warren, 139; in Delaware and St. Lawrence, 135; in Broome, 132; and in each of the counties of Greene, Hamilton, Monroe, Onondaga, Richmond, Saratoga, Steuben, Tioga, and Wyoming, 100 and upwards.

The aggregate number of heads of neat cattle in the State is 2,072,330, being an

average of upwards of 35,000 in each county, of which there are nearly 86,000 in the county of Jefferson; 85,464 in the county of Oneida; nearly 78,000 in the county of St. Lawrence; 66,885 in the county of Chautauque; 63,745 in the county of Chenango; 62,555 in the county of Delaware; 61,706 in the county of Otsego; 59,712 in the county of Orange; 57,506 in the county of Erie; 55,482 in the county of Steuben; 53,440 in the county of Herkimer; nearly 52,000 in the county of Allegany; 49,498 in the county of Onondaga; 47,258 in the county of Dutchess; 45,256 in the county of Cattaraugus; 45,216 in the county of Madison; 43,527 in the county of Washington; 41,584 in the county of Cayuga; and 41,300 in the county of Oswego. The number of neat cattle under one year old is 334,456, and the number over one year old is 1,709,479. The aggregate number of neat cattle is less by about 130,000 than in 1840.

ICE HOUSES.

We can not find the article on ice houses to which our correspondent, Mr. H. T. Wakefield, refers. A box ten feet square on the ground, and ten or fifteen feet high, as he suggests, would form storage room large enough for ice for a common family. A house for keeping ice the year round, should be protected from the natural warmth of the earth under the building, as well as from that of the atmosphere at its sides and roof. Dry spent tan bark, or dry clean straw, may be used as a non-conductor of heat, to fill in between the inner and outer boards of the walls of the ice room. In Georgia, good ice houses are made altogether above the earth; and as it radiates more heat than is commonly supposed, care should be taken to have a good non-conductor under the ice. Pounded charcoal is perhaps the best, although tan and straw are used. Mr. W. appears in doubt about the form and make of the roof. There is an excellent ice house in this city which has a flat roof (double, of course,) and fire proof. Were we about to construct an ice house on a farm, we should first provide suitable drains to carry off the water from any ice that may melt and run through the floor Then a frame of three by four scantling, ten or twelve feet high, should be erected, with rafters for a common double roof. This frame should be boarded with common boards (or plank, as they are called in half the States,) on the inside, rafters included. Outside of this building, another frame of the same materials should be erected to cover it entirely, leaving a foot space all round and over the rafters to be filled in with dry straw. The boards on the outside frame had better be jointed and matched; and if planed and painted white, it would be an improvement. The scantling standing a foot distant from each other in the clear, and being four inches in thickness, from the covering on the outside to the lining on the inside would give a space between of twenty inches to be filled with clean straw. Properly put in, experience has shown this to form a cheap and nearly perfect non-conductor of heat. The inner door should be double, and listed, to keep warm summer air out. If filled with chaff or charcoal dust, so much the better. The outer door may be single, but should be tight. As the ice melts in spring a little all round next to the walls of the building, straw must be rammed into the space between the boards and ice, which will give it a covering of straw, and prevent further loss. Where lumber is not high, a good ice house may be constructed at a small cost; while for dairy purposes, keeping fresh meats, strawberries, fresh peaches, grapes, and other fruits, it can be made profitable, as well as the source of many luxuries. At the South, ice houses are set up on posts, like corn cribs, having a double floor, with some non-conductor of heat between the boards. At the North, they generally stand flat upon the ground, having only gravel or sand under the floor for the drainage of water, while the ice is packed away on a good layer of straw.

Since writing the above, our attention has been called to directions for building an ice house, given by Mr. WYETH, of Boston, superintendent of the large commercial ice houses near that city, and published in the tenth volume of this journal. They are as follows:

In the beginning, we should remark that the great ice houses of our ice companies are usually built above ground; and Mr. WYETH in his letter to us remarks, "*We now never use or build an ice house under ground;* it never preserves ice as well as those built above ground, and costs much more. I, however, send you directions for the construction of both kinds, with slight sketches in explanation." The following are Mr. WYETH's directions for building:

"1*st. An Ice House Above Ground.*—An ice house above ground should be built upon the plan of having a double partition, with the hollow space between filled with some non-conducting substance.

"In the first place, the frame of the sides should be formed of two ranges of upright joists, six by four inches; the lower ends of the joists should be put into the ground without any sill, which is apt to let air pass through. These two ranges of joists should be about two feet and one-half apart at the bottom, and two feet at the top. At the top these joists should be morticed into the cross-beams, which are to support the upper floor. The joists in the two ranges should be placed each opposite another. They should then be lined or faced on one side with rough boarding, which need not be very tight. This boarding should be nailed to those edges of the joists nearest each other, so that one range of joists should be outside the building, and the other inside the ice room or vault.

"The space between these boardings or partitions should be filled with wet tan, or sawdust, whichever is cheapest or more easily obtained. The reason for using *wet* material for filling this space is, that during the winter it freezes, and until it is again thawed little or no ice will melt at the sides of the vault.

"The bottom of the ice vault should be filled about a foot deep with small blocks of wood; these are leveled and covered with wood shavings, over which a strong plank floor should be laid to receive the ice.

"Upon the beams above the vault, a pretty tight floor should also be laid, and this floor should be covered several inches deep with dry tan or sawdust. The roof of the ice house should have considerable pitch, and the space between the upper floor and the roof should be ventilated by a lattice window at each gable end, or something equivalent, to pass out the warm air which will accumulate beneath the roof. A door must be provided in the side of the vault to fill and discharge it; but it should always be closed up higher than the ice, and when not in use should be kept closed altogether.

"2*d. An Ice House Below Ground.*—This is only thoroughly made by building up the sides of the pit with a good brick or stone wall, laid in mortar. Inside of this wall set joists, and build a light wooden partition against which to place the ice. A good floor should be laid over the vault, as just described, and this should be covered with dry tan or sawdust. In this floor the door must be cut to give access to the ice.

"As regards the bottom of the vault, the floor, the lattice windows in the gables for ventilation, etc., the same remarks will apply that have just been given for the ice house above ground, with the addition that in one of the gables, in this case, must be the door for filling the house with ice.

"If the ground where ice houses of either kind are built is not porous enough to let the melted ice drain away, then there should be a waste pipe to carry it off, which should be slightly bent, so as always to retain water enough in it to prevent the passage of air upwards into the ice house."

STUDY THE ATMOSPHERE.

EVERY one should know the properties and functions of the air he breathes, and of that gaseous ocean which surrounds the globe, and contributes so largely to the nourishment of all plants and animals. To the farmer, the study of the atmosphere is peculiarly important; for its elements, if wisely used, will be to him a mine of wealth. Its nitrogen, oxygen, carbonic acid, ammonia, nitric acid, and aqueous vapor, are the substances from which crops are made, under the genial influence of solar light and heat, aided by the small amount of earthy matter which appears as ash when plants are burnt. If crops were not formed mainly from water and air, it is inconceivable how the addition of 150 lbs. of gypsum, or guano, to an acre of land should increase the weight of its plants one or two tons. Let a dry cotton or corn plant be burnt, and it is nearly all converted into gaseous bodies, and widely diffused in the atmosphere; and when vege-

tables and animals die and rot on the surface of the earth, a similar phenomenon is witnessed.

The gases that form the atmosphere are not chemically combined, but diffused in space in obedience to a peculiar law. If one has a tall glass jar that will hold a half gallon, he may pour into it a half pint of mercury, a half pint of water, and a like quantity of oil, and these liquids, having each a different specific gravity, do not mix nor mingle, but preserve two distinct lines of demarkation, the one between the quicksilver and the water on the one side, and the oil and water on the other.

Carbonic acid gas, oxygen, and hydrogen, have each a different specific gravity, but if we fill the same jar one-third full with the first named gas, which is the heaviest, and one-third with oxygen, which is next in weight, and one one-third with hydrogen, which is the lightest, the carbonic acid, although twenty-two times heavier than hydrogen, will rise to its surface, while the hydrogen will pass down through the oxygen, which is sixteen times heavier than itself, to the bottom of the jar. All gases in the atmosphere, or out of it, behave to each other as they would in a vacuum—each spreading indefinitely into space, regardless of the presence of other gases. Watery vapor obeys the same law of diffusion.

Why it rains, and *how* it rains, the formation of dew, and the dew-point, are meteorological problems and phenomena, which our young readers may be glad to have explained to them.

A very dry atmosphere has a thirst for water so intense, that it will absorb moisture from ice many degrees below the freezing point. Evaporation never entirely ceases until after the atmosphere is completely saturated. When this takes place, by what natural process is the water precipitated in rain, snow, and dews? These results follow an atmospheric law, by which the air has a varying capacity to hold water as vapor, whether invisible or visible. If the atmosphere had the same power to contain aqueous particles at all common temperatures, it could never rain, nor would there ever be a dew. A change of temperature is the cause of rain, hail, snow, dew, mists, and clouds; and the daily revolutions of the earth on its axis, and its annual circuit round the sun, are the principal causes, not only of a change of temperature and winds, but of summer, autumn, winter, and spring. The humidity of the atmosphere governs in a good degree the evaporation from the leaves of agricultural plants as well as others; and evaporation is the measure of circulation from the roots of all trees and all growing crops. Humidity is an important element in agriculture, even when it does not rain. When a current of air saturated with moisture, meets one of a different temperature, and also saturated, a fall of rain is inevitable, because the air at the mean between the two extremes has always a less capacity to hold aqueous vapor than each separate mass of air had before the two were united. Thus: suppose the atmosphere high up near the region of perpetual snow, or the snow-line, saturated with water at 40°, descends to an atmosphere near the earth equally filled with vapor, and having a temperature of 80°. The mean between 40 and 80 is 60°; and if the air at that temperature had the mean capacity between 40 and 80° for holding water, it could not rain nor hail, nor snow, nor yield a respectable dew. It is easy to understand that without rain, there could be no land animals or plants; and therefore the Divine mechanism for dropping fatness from the heavens in showers and dews is the more worthy of study and admiration.

Heat expands the atmosphere, and increases its capacity to take up water and hold it as an invisible vapor. Cold condenses air, and diminishes its power to contain particles of water in any form. The attraction of aggregation brings the separate particles together, often aided by electricity, and the sudden concussion of thunder, and they fall by reason of the attraction of gravitation. It sometimes happens that drops of rain are wholly evaporated before they reach the earth in passing a stratum of dry atmosphere;

and at other times a mass of fine, cold particles gain greatly in size and coalesce into large drops in falling through a stratum of saturated air.

To measure the quantity of dew deposited each night, an instrument is used called a *drosometer*. The most simple process consists in exposing to the open air bodies whose exact weight is known, and then weighing them again after they are covered with dew. According to WEELS, locks of wool, weighing five decigrammes, are to be preferred, which are to be divided into spherical masses of the diameter of about five centimeters.

Alchemists used carefully to collect dew, which they regarded as an exudation from the stars, and in which they hoped to find gold. It is only recently that the true theory of the formation of dew has been established; although ARISTOTLE's observations pointed out the fact that most dew falls in calm, clear nights. In the cool of evening, different bodies part with the heat imbibed during the day, unequally; some cooling faster than others. The leaves of trees, grass and other plants radiate heat rapidly, and soon become cold enough, to do what? Condense, like ice-water in a pitcher, aqueous vapor in the atmosphere on the cold surface. White sand and clay are poor conductors of heat, cool slowly, and while green herbage is covered with a heavy dew, naked earth has little or none. At the South, and even in the climate of Washington, a heavy dew runs into a morning shower; a phenomenon which we never saw at the North. By greatly cooling the atmosphere during night, and lessening its capacity to hold water as vapor, not only are vessicles formed which constitute the body of fog and mist, but a shower of fine rain is not uncommon.

The dew-point, which once attracted a good deal of attention, is a very simple affair. It is the point of temperature at which the precipitation of water takes place; and this point varies with the humidity of the atmosphere. A comparatively damp atmosphere, other things being equal, precipitates a portion of its vapor in dew, sooner than a dry atmosphere. If the temperature is below freezing, the dew is congealed into a white frost, or a black one, according to the circumstances.

We have been led into this train of though by reading in a foreign journal an account of some interesting researches made by an eminent French chemist, M. BARREL, showing the amount of foreign bodies, and the good manures, brought to the earth in rain water during a year. Had the water fallen in a remote rural district instead of the city of Paris, the result would have been more satisfactory. M. BARREL states that although the quantity of the following substances varied in different months, yet the monthly average from July to December, inclusive, was as follows:

SUBSTANCES IN A CUBIC METER OF RAIN WATER.

Nitrogen,	8.36	grammes	129	grains.
Nitric acid,	19.09	do	294	do
Ammonia,	3.61	do	357	do
Chlorine,	2.27	do	35	do
Lime,	6.48	do	100	do
Magnesia,	2.12	do	32.7	do

Allowing water to fall only twenty-four inches in twelve months, and the above figures indicate a gain per acre as follows:

Nitrogen,	45¾ pounds.
Nitric acid,	103 do
Ammonia,	19¾ do
Chloride,	12½ do
Lime,	35 do
Magnesia,	11 do

One hundred and three pounds of nitric acid, and nineteen and a half of ammonia, give a very good dressing of the most valuable constituent of crops. Deep plowed and finely-tilled earth absorbs most of the manures which fall in rain, snow, and dew, and this is one of the great secrets of successful agriculture. Prepare the land well before the seed is planted, and Nature will reward you liberally for so doing.

CULTIVATION OF PASTURE LAND. – The season reminds us of the necessity of saying a word for the much neglected grass land. The majority of parties, who take the utmost pains with their tillage, seem to think that their grass is a different matter, and that it may very well take care of itself. Nor is it often better treated when first laid down. Land is by far too frequently first-cropped as long as it will produce seed again, and then laid down to become permanent pasture. Great credit is taken if the land is made summer-fallow before the close of the corn-cropping; but too often a fallow crop is also taken, to *protect* the seeds, for fear they should grow too luxuriantly.

Others take greater care. They grow no crop of corn; they pay a high price for well selected and carefully grown grass-seeds, and, possibly, they sow the land in fine mechanical condition; still they are sometimes disappointed, and blame the seedsman if they do not find his finer grasses grow as plentifully or luxurantly as they could wish. The fact is, they wonder ought to be that any should grow at all.

Sometimes grass land is taken out to improve and lay down again to pasture. But the process adopted is one of depletion, and not of nutrition. They crop away with corn so long as crops are obtainable, and then take great credit if the land gets a dose of lime when it is laid down to grass. And oftener the grass, after the *improvement*, is worse than that which preceded—carries less stock, and maintains them in a manner far inferior to what it did before.

The old grass land of the farm is seldom acted fairly by. It must give up all, and receive nothing in return. If it is mown, a little rotten chaff, or waste scrapings, is a liberal allowance. If not, it is considered that no manure is necessary. Though milking cattle and store stock are depastured upon it, and carry all off year after year, no addition of manure of any value is made to the soil for this serious abstraction. In rich alluvial feeding pastures it is unnecessary, but where store cattle of any kind are depastured, the land must inevitably deteriorate.

To begin with the beginning, land to lay down with grass should be as carefully prepared as for any other green crop; the one being permanent, however, and the other only temporary, the greater care should be taken of the preparation; this is of *more* consequence than seeds. There are always natural grass-seeds in every soil, lying ready for germination and growth as soon as the manurial or feeding elements of the soil are ready for their development. On this principle it is that a dressing of mountain lime will bring into action seeds of white clover where a white clover plant was never known to have existed before. So on a very rich stubble, on almost any soil, there will be found the finest grasses growing in rich luxuriance, after the corn crop is taken off, without a single seed being sown. In like manner, one year will bring a vast smother of trefoil on land where none was ever sown.

Hence, to be rich—to have abundance of phosphoric acid in a free state—to have a full supply of ammoniacal matter, are of more importance than being particular to a shade in the selection of grasses. It is only a question of time. If the land be rich and fertile, there will be found a growth of the finest grasses which are adapted to the soil, and these will soon eat out those which are more or less unsuitable.

So in improving pasture; it is not always necessary to take it out into tillage. If hide-bound, a good heavy loaming, a few fresh seeds, and a compost dressing will soon recover it. If mossy, the moss will soon disappear before good cultivation. It is Nature's covering for land too poor to grow grass; and on stone walls, rocks, and similar places, the moss appears for simply the same reason—it is a covering preparatory to the production of more nutrient material.

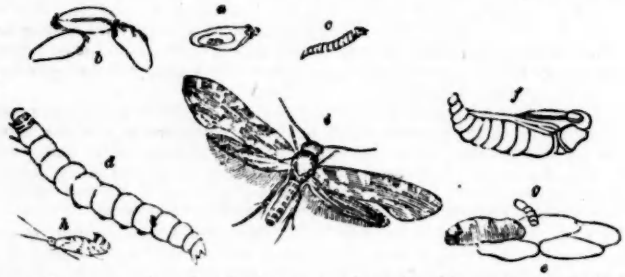
Rushes and similar plants, due to the prevalence of stagnant water, are to be disposed of in another way, namely, by proper and efficient drainage.

But a ready mode of transferring pasture from one field to another has been adopted, and not without success. A field, properly leveled and prepared, has had a cover of turf or sods, pared some two-and-a-half inches thick, and so placed upon it, at a cost not exceeding fifty shillings per acre, including cartage; this has been slightly manured and well rolled, an advantage to the turf, and a rapid accession of permanent grass pasture to the arable. This is a mode far preferable to that of inoculation. Grass will be had at a much earlier period, and, if well followed up by dressings of manure, it will soon become a pasture as permanent in appearance as if it had been lying in that state for ages. In fact, it will have acquired the age of its surface.

For grass-land, it is not always necessary to apply farm-yard manure. Guano will have the most powerful and speedy effects on a pasture, if applied before rain. If that does not pretty rapidly follow, there will be great loss by the application. Bones produce a wonderful effect on the Cheshire pasture—denuded of their phosphorus by the cheese sold away from the farms, which it so supplies; but the majority of clay grass-lands will require the bones to be dissolved before any very striking effect can be produced. The light land grass—the greatest difficulty of all, which the Scotchman would say ought always to be converted into arable, and only allowed to lay down for two or three years—may be dressed with a compost of clay and dissolved bones with the greatest advantage. If the house bones of most of our farmers were from time to time to be put in an earthenware jar half full of sulphuric acid, and this poured from time to time on a heap of clay, a vast quantity of the most valuable manure would be made from materials at present wasted. —*London Magazine.*

TINEA GRANELLA—GRAIN MOTH.

This insect is called in English works "The Mottled Woolen Moth," and has received the scientific appellation of *Tinea granella*. The caterpillars do incredible injury to grain stored in barns and ware-houses, after it is separated from the straw and chaff. From April till August the little moth is found in granaries, resting by day on the walls and beams, and flying about only at night, unless disturbed. Soon after they have escaped from the chrysales the sexes pair, and the female lays one or two eggs on each grain of wheat, until she has deposited thirty or more; they are so minute as to be invisible without a magnifying glass, when they appear of an oval shape, and of a yellowish-white color.



Description of Plate.—*a*, A grain of wheat opened to show the cavity in which the caterpillar of *Tinea granella* had fed, with the excrement at the apex. *b*, Several grains united by the same caterpillar. *c*, The caterpillar of *Tinea granella*. *d*, The same magnified. *e*, A group of the cocoons spun by the same. *f*, The chrysalis taken out of a cocoon, magnified. *g*, A chrysalis sticking in a coccoon after the moth was hatched. *h*, *Tinea granella* at rest. *i*, The same flying and magnified.

The small white worms hatch in a few days, and immediately penetrate the grain, carefully closing up the aperture with their roundish white excrement, which is held together by a fine web. Fig. *a* represents this web, and the excrement attached at the apex of the grain. When a single grain is not sufficient for its nourishment, the larva unites a second grain to the first by the same web; and by repeating the process joins several together, and thereby forms a secure habitation, which at the same time is well stored with provisions. When the maggots are almost full-grown, they often leave their lodgings in great numbers, running over the grain and covering the whole surface so effectually with a thick web of a grayish-white color, that scarcely a grain of wheat is visible. In August or September the caterpillars arrive at maturity, when they leave the grain heaps and search for a safe and suitable place to undergo their metamorphosis, and at this period they are most observed. They form their cocoons by gnawing the wood and working it up into their web, in any chink in the floor, walls, or roof, which are frequently swarming with them; and these cocoons, being of the form and size of a grain of wheat, look like one dusted over. It there remains in its snug and warm berth in the larva state through the winter, and does not change to a chrysalis until the month of March following, and in a backward spring not until May. The pupa is of a deep chestnut color, the abdominal rings being of a shining yellow tint, and the apex is furnished with two little points. In two or three weeks after they have assumed the pupa form the moth hatches, and, it is said, with almost perfect wings at its birth, leaving the empty chrysalis sticking half out of the cocoon.

It is difficult to guard against the introduction of this moth, since it deposits its eggs on the sheaves in the field, as well as after the grain is stored and threshed out, and will feed as freely upon barley, rye, and oats, as upon wheat. It is, however, not difficult to suggest palliatives, if not remedies; and if the following rules are strictly observed, few persons will suffer from the inroads of this insect:

1. Before replenishing an empty granary or loft, the floor should be well scoured with hot water and soft soap, or lees, if practicable; if not, it must be well brushed with a fine stiff broom, to clean out the chinks or fissures between the boards. The roof and beams should be whitewashed, as well as the walls, with lime-water used as hot as possible; and these operations would have greater effect if performed in the winter months. Sprinkling the floor with salt dissolved in strong vinegar has been recommended, and might be very serviceable.

2. In granaries already stored, where the caterpillars are at work, whatever method for their destruction is resorted to, by heat, ventilation, or otherwise, it must be employed during the summer, from the end of May to the end of August, occasionally a month earlier or later, as during the winter these larvæ are not to be found among the grain heaps; they retire in the autumn to conceal themselves in fissures and cracks in the floors and walls, to form their cocoons.

3d. The moths themselves may be destroyed in spring by burning lamps or gas lights in dark granaries; they being attracted by the flame, fly into it, and are sufficiently injured to prevent their doing further mischief; and at the same season the grain should be frequently turned over to destroy the eggs and disturb the young larvæ. All cracks and broken places in the walls and roof should be stopped with plaster of Paris, or cement, and the apertures for ventilation should be covered with a wire gauze.

Kiln-drying, at about 112° Fahrenheit, will kill the larvæ when they are feeding. *Cold currents of air*, introduced by small windows near the floor, thus keeping up an artificial cold atmosphere, are very effectual. *Burning sulphur*, and creating sulphuric acid in a close apartment, will kill the moths.

A small heap of grain left undisturbed, frequently turning over the rest, is a sure and simple plan of catching the larvæ, where they can easily be destroyed by pouring on boiling water.

When diseased grain is used for seed, it should be sown deep to prevent the moths from escaping through the soil. It is also desirable to cut the grain in good season, for if it is suffered to remain too long in the field the moths are enabled to lay their eggs in the ears, and are thus introduced into the barn.

Cure for Glanders.—In the August number of the *Farmer*, for the present year, is a dangerous note published, entitled "Cure for Glanders." I, as a veterinarian, solicit space in your colums to discuss the subject; and while I endeavor to do so, I shall quote from Percivall, Youatt, and other authors of less note. From the statement of the case, I am convinced that it was strangles (instead of glanders), which I believe, from my own observation, to be contagious. According to the above authors, the strangles are often confounded with glanders; and yet they do not believe it is infectious, although they furnish no proof to the contrary. I never knew a horse to take such an acute form of glanders as that described in the text, nor does it agree with Mr. Youatt's description.

Mr. Williams says the glanders are always attended with a swelling of the kernels, or glands, under the jaws; but in every other respect the horse is healthy and sound, till the disease has continued a long time. We shall find that Mr. McS. not only erred in the kind of disease, but also in the location of glanders. He says: "Why, it is diseased glands—the little vessels that bring the saliva to the mouth and throat are diseased, stopped up, and must be opened." Mr. Youatt says it is inflammation, whether specific or common, of the lining membrane of the nose, possibly for months, and even for years, confined to that membrane, and even to a portion of it; the health and the usefulness of the animal not being in the slightest degree impaired. Then, from some unknown cause, not a new but a more intense action is set up; the inflammation more speedily runs its course, and the membrane becomes ulcerated; the inflammation spreads on either side down the septum, and the ulceration at length assumes that peculiar chancrous form which characterizes inflammation of the absorbents. Even when the discharge becomes gluey, and some time after chancres have appeared, the horse is apparently well. But I admit that in some cases it terminates more speedily than in others.

We learn by materia medica that tobacco has eight medical qualities, viz: emetic, cathartic, sudorific, expectorant, narcotic, sialagogue, diuretic, and anti-spasmodic. Besides these, there is a volatile poisonous base, called nicotine, one drop of which is said to kill a large dog. And it may be that Mr. McS. has found a new and more speedy remedy in tobacco for the cure of strangles, which he deserves credit for. Mr. YOUATT says that tobacco in the hands of a skillful veterinarian may be advantageously employed in cases of extreme costiveness or dangerous cholic, but should never be permitted to be used as an external application for the cure of mange, or an internal medicine to promote a fine coat. Men who undertake to do any thing with a glandered horse, should be very careful to examine their hands and face, to see that there are no cuts or sores on them, for the glanders have in this way been innoculated into the human system, causing some of the most horrible and frightful deaths. It would be well, however, to state that tobacco fermentation should not be used in strangles after pus is formed, or suppuration taken place, or after the abscess has broken, which would only have a tendency to aggravate the disease, instead of doing any good.

It appears that the first stage of glanders is confined for a length of time to the pitnitary membrane of the nose, and is characterized by a thin, watery discharge. Then the second stage begins: the glands begin to get affected, the discharge becomes more and thicker, the glands enlarge, and so on to the third stage, when the swelling of the glands begins to subside, farcy sets in, the nasal discharge becomes darker, ulcerations show themselves along the veins absorbent and large lymphatives, and perhaps extend on to the lungs, and entirely obliterate them. The horse dies, as it were, almost a decomposed mass. In Mr. YOUATT's concluding remarks he says: "Worse than all, the man who attends on that horse is in danger. The cases are now becoming far too numerous in which the groom or the veterinary surgeon attending on glandered horses becomes infected, and in the majority of cases dies." S. A. ELLIS.—*Roscoe, Coshocton County, Ohio.*

FRAUDS IN WOOLEN CLOTH.—It is not generally known that hundreds, and I might say thousands, of bales of the cast off rags of paupers have been imported and worked up in woolen cloth to sell to the American people. These rags, as you told us not long since, were formerly used as manure. Imported rags, all wool, bring seven cents per pound in New York market; rags half cotton and half wool, three to four cents per pound. Now, who among your readers, if they knew it, would wear a garment made in part of wool of the worst description, and part of the lousy rags of beggars? Who would, if they knew it, wear woolen clothes fit only for manure? All the low priced men's wear is of this description of cloth, and may be easily detected by putting one's hand upon it; it feels as rough as a horse-card. There is no occasion for manufacturers to work up old rags in this country, where wool is so plenty; but they will continue to make it as long as they can humbug, sell, and fleece the people out of their money. This counterfeit cloth is made of imported rags, and imported wool that cost but little more than the rags. The frauds the manufacturers commit upon the unsuspecting laboring men throws the sheep speculation entirely in the shade.

I reluctantly acknowledge the general laxity of trading morals, and the little value set upon virtous actions; and it is astonishing how few persons among the laboring classes deeply interested in agricultural prosperity, take the trouble to read, think, and act upon broad and sound principles. A MICHIGAN FARMER.

BURNING LIME.—A new mode of burning lime appeared in your September number. With us it is not a new thing; it has been thoroughly tried and found to be a failure. By the time Mr. HALE has used his lime kiln one season, he will change his mind as to its utility. It will do all that he says as long as the arch will stand. The difficulty is, that as soon as the stone in the kiln is heated it expands with a force that can not be restrained. The arch, or roof, resting upon the top of the kiln, must by the expansion and contraction of the heated stones very soon "cave in." The arch, with its necessary chimneys, is very heavy, and like all arches needs and must have a good foundation; and a lime kiln is any thing but a good foundation. I write this as a caution to the unexperienced. C. W.—*Lake Grove.*

TO CLEAN CHESS FROM WHEAT.—Take all the screens out, except the lower one; let the wheat fall pretty well back; blow hard, and if the wheat goes over too much, elevate the hind end of the mill a little, and it may be entirely cleaned without difficulty, no matter how foul. R. WILLET.—*Cambria, N. Y.*

The present harvest has shown me the necessity of getting a harvesting machine for cutting my wheat next season. My wheat was the first sowing this season, consequently shorter; but Mr. Hardy, a neighbor, has a crop averaging six and seven feet high, very thick, and heavy headed. It is supposed it will yield sixty bushels to the acre, and he says it is almost impossible to cut it with a cradle. If you will send me a description of the best header and its weight, the cost, and cost of transportation from your place or any eastern seaport to Scotsburgh or Portland, Oregon, I will lay your paper before the citizens of Douglass county, and get all the subscribers I can to it. Please let me know the weight and expense of getting a wheat-drill here.

We have a pleasant, healthy country, and crops look remarkably well. I killed a steer a year old last March that weighed over five hundred pounds, and sold it for one hundred dollars at eighteen and twenty cents per pound.

The best time for sowing winter wheat is the last of April and first of May. It grows some in the spring, and does not stalk; it remains without stems until fall rains commence—then it grows all winter, and is harvested the last of May or first of June, although wheat can be sown every day of the year and produce a crop. The best way of manuring land is by making boards out of cedar timber, it being very light, inclosing the land, rearing stock, and turning them off the prairie on to the land in summer and fall at night, and turning them out in the morning to graze through the day. I have often heard it remarked here by men who were in the habit of stall-feeding cattle in the States, that they never were able to produce by feeding, currying, and rubbing, so fine, fat, slick-coated, soft-haired cattle, as are produced here by Nature, or Nature's food, without the assistant hand of man. Alfred B. Collver.—*Winchester, Douglass county, Oregon.*

Culture of Bees.—I have long wished to see the culture of bees carried on in a more economical manner than is common in many parts of this country. I have heard something and read a little about a non-swarming bee hive being used in some places; I have also seen a diagram of one, but no explanation was given of it. I have long considered it a cruel and inhuman practice, after the harmless, industrious little insects have labored so diligently all the season, and prepared a good and ample supply of food against the day of want, that their town should be beseiged, themselves murdered, and their store-houses plundered, to satisfy the lustful appetites of men.

Now, since it is a well known fact that a prosperous swarm of bees will in one season accumulate far more food than they require for the winter, can not an edifice be constructed so as to preserve the lives of the bees, and also to supply their proprietor with plenty of honey? I have no doubt but that the project has been tested, but whether it has proved satisfactory or not I have not yet been able to learn, as it has not, to my knowledge, been tried in this section of the country.

Will you, or any of your readers, please to furnish me with the desired information through the medium of the *Farmer*, whether such a building can be made as will be profitable to farmers who keep from five to twelve or fifteen hives of bees? and, if practicable, give a draft and description of it. I think this information will not only interest myself, but a good portion of the farming community. A Reader.—*Romney, N. Y.*

Emigration of Irish Laborers.—The *Mark Lane Express* observes: "The great bulk of our emigrants still go to America, where the opening up of her boundless regions by railroads—the growth of large cities affording a sure market for produce—and the progress of the arts and sciences generally, confer upon the new settler many advantages which previously were not enjoyed. The hardships which were once experienced are no longer heard of in the New World; so that colonization has at length become, as it were, civilized. Indeed, such is the degree of progress, that our transatlantic cousins are entering into competition with us, at our annual meetings, with their reaping machines, churns, &c., and bidding fair to leave us in the distance!"

To keep Worms out of Bee Hives.—In the July number of the *Genesee Farmer*, on page 224, a correspondent asks for the "best method to keep worms out of common box bee hives." I use that kind of hive, and no other. I set them on small round stones, one under each corner of the hive, from one-half to one inch in diameter. This gives the bees room, and they will drive off the millars, which lay their eggs in small crevices. I have never been troubled with them since I adopted this method. Richard Willet.—*Cambria, N. Y.*

Horticultural Department.

CONDUCTED BY P. BARRY.

GOOD CULTURE.

In our recent meetings with fruit-growers we have observed that *high culture* is more thought of and spoken of than formerly, and that people begin to take as much pleasure in exhibiting a few varieties of remarkable fine growth and handsome appearance as they have done in showing a large collection, the chief merit of which was its variety. We are glad to see this, and we are glad that societies, in offering premiums to promote improvement in fruit-culture, are beginning to shape their prizes so as to encourage this. When our amateur cultivators all over the country withdraw their attention from the exciting pursuit of novelties, and concentrate it upon the culture and management of small, well chosen collections, we may expect to see some real advancement made, but not until then. We would much rather pay a visit to a fruit garden in which we could find ten or a dozen varieties of the very best fruits under good management, the trees skillfully and tastefully trained, in a vigorous and luxuriant state of growth, with fruit in the highest state of perfection, than to find fifty varieties scattered about in all corners without system or order, stunted in growth and half covered with weeds. One well-grown tree, or one dish of superior specimens of any fine fruit, gives more satisfaction, elicits more admiration, and confers, in our opinion, more honor on the proprietor than fifty neglected trees or shabby dishes of fruit. If we listen to the remarks of visitors at an exhibition, when the mass judge of things just as they are, we will be convinced of the truth of this. To collect *new* varieties is an easy matter, if one has money enough, and ground enough; but money, unless in the employment of skill, will not cultivate trees. It requires the exercise of constant care and skillful treatment; and skill is only obtained by experience, observation, and industrious research. This is what we want now in this country—how to feed and train trees in order to bring them to the highest possible development, both of beauty and fertility. We really know very little yet of what can and may be done in the growth of fruits. Occasionally we see a few specimens that give us an inkling on this subject; but the instances in which such specimens are brought to light are like angels visits, "few and far between."

At the late Monroe County Agricultural and Horticultural Exhibition there was a capital show of fruits, taken as a whole, for the season of the year, the first day of October. They were generally fair and handsome, but among them we found a few articles that set us thinking. A dish of *Sheldon* pears, of extraordinary size and fairness, nearly twice as large as those, even who know that variety well, supposed it ever grew; they took us and every one else by surprise, and gave us to know what the *Sheldon* may be. These specimens were exhibited by the Hon. L. A. Ward, with whom this variety has been for years an especial favorite. We know nothing about the circumstances of their culture, but we intend to ascertain if we can. This was one of the most interesting items we have found at the shows of 1853. We also saw, presented by H. P. Norton, Esq., of Brockport, extraordinary specimens of *Glout Morceau*, *Henry IV.*, and some others. The *Glout Morceau* were nearly as large again as we usually see them, smooth and perfect. *Henry IV.*, which is generally a small pear, were as large as fair specimens of *Viraglieu*. Mr. Norton is a good cultivator, and we presume the trees on which these specimens grew had nothing more than his usual care and treatment.

Orchardists who are growing fruits for market must reform their practice in this

respect. Full one-half of the orchard fruits produced in this country are unmarketable on account of the defective culture and management of the trees. A few individuals who do give their business thorough attention, realize profits that are incredible to careless growers. One man sells his fruits readily for three or four times what another can obtain with difficulty. No other branch of rural affairs whatever offers such profits, and at the same time such pleasures, as the cultivation of fruits if done properly; a careless, half-way system will, as in all other pursuits, be unsatisfactory. A multitude of persons have embarked in fruit-culture with a view to profit, apparently under the belief that trees can take care of themselves, or pretty much so, until they have attained a productive state. They are planted and left there; the ground cropped and cultivated as though no trees were there, and no one who knows what a tree is, or what it requires, is appointed to look after them. At the end of a few years, about the time that an income was expected, we hear a grumbling about the trees not doing well, &c., &c. People must know that it is useless to plant large orchards without having competent persons whose special business it will be to cultivate and take care of them. We must not be told that it will not pay, for we know it will pay, and we know that it will not pay to neglect them. Every fruit tree requires certain attention nearly every month in the year. It may be trifling, to be sure, but good culture is made up of a series of operations in themselves but apparent trifles.

HORTICULTURAL DEPARTMENT OF THE STATE FAIR AT SARATOGA.

The department of horticulture at Saratoga suffered many and serious inconveniences. *First*, no timely arrangements were made, all being postponed till the day on which the Fair was announced to open. *Second*, the tent which belongs to that department failed to arrive; and *third and worst of all*, it rained during all of the first day. This was a gloomy, melancholy day among the exhibitors who had, many of them, traveled a long journey, and were unable to unpack their fruits and flowers, although aware that they were suffering seriously. The second day, however, shown out bright and warm. Another tent was substituted for the missing one, and was soon raised. Then the eager exhibitors went to work, and in less than an hour the entire ranges of shelves were covered with fruits and flowers. Committees of arrangements, including ladies, had some embellishments ready made, and they sprung up in the center of the tent as if by magic. Still, there were large contributions of both fruits and flowers for which no place could be found, and the general arrangement was hurried and defective. But after all, the show was a good one—in many respects one of the best the Society has yet made.

The display of fruit was exceedingly interesting and instructive. Visitors, as they passed around, seemed to be at once surprised and delighted. It afforded very gratifying evidence of the progress we are making in fruit culture. Many of the collections were rare and valuable, the specimens unusually fine, and, with a few exceptions, accurately named and tastefully exhibited. Among amateurs, the collections of D. T. Vail, Esq., of Troy, had no rival. It embraced some eighty varieties of pears, remarkably well grown, and including many of the finest new sorts—such as *Duchesse d'Orleans*, *Beurre d'Anjou*, *Beurre Superfin*, &c. Probably no other amateur cultivator in this State could bring forward such a collection.

The nurserymen made a very spirited and creditable display. Messrs. Hovey, & Co., of Boston, sent a fine collection of 150 varieties of pears. This, we believe, was the only foreign contribution. Messrs. A. Saul & Co., of Newburgh; Wilson, Thorburn, & Teller, of Albany; Thorp, Smith, Hanchett & Co., of Syracuse; John Morse, of

Cayuga; T. C. Maxwell & Co., of Geneva; G. H. Cherry & Co., A. Frost & Co., and Ellwanger & Barry, of Rochester; all contributed largely. John J. Thomas, of Macedon, presented a handsome collection. Among his pears we observed a dish of *Washington*—very beautiful—the finest we have seen. N. & E. S. Hayward, of Brighton, as usual, made a fine display of apples, peaches, and grapes.

There was a strong competition for the premiums offered for select assortments—such as the best 20, 12, 6, &c., of the various fruits. For the results we must await the committee's report.

Of peaches there were few. Mr. Morse, of Cayuga, and the Messrs. Hayward, of Brighton, had small collections. It was also too late for plums, but Mr. E. Dorr, of Albany, had a nice collection of 12 or 14 varieties. Mr. Bennett, of Mechanicsville, a small collection, and Ellwanger & Barry some 14 varieties.

In the way of flowers, Mechanicsville made the most numerous contributions. Mrs. E. L. E. Smith, of that place, presented a very handsome named collection of Dahlias, including some fine new sorts. Mrs. T. Mabbett, Mrs. Samuel Lewis, Mrs. J. M. Smith, Mrs. Geo. Warren, Mrs. P. Bennett, all of Mechanicsville, contributed flowers, boquets, and floral ornaments in profusion. William Newcomb made a showy display of Asters.

Among nurserymen the largest contributors were Jonathan Batty, of Keesville; James Wilson, of Albany; and Messrs. Frost & Co., and Ellwanger & Barry, of Rochester.

The best collections of Roses, Verbenas, &c., were from a distance, and had all suffered much from carriage—besides, there was not space enough to arrange them to appear well. We regretted to see good things crowded off the stands to make way for mere rubbish, and to see valuable space occupied with objects *mis*-called floral ornaments, anything but ornamental.

Of vegetables there were a few small collections. The best were from Theodore Backus, of Rochester; N. Culver, of Wayne county; and P. Reilly, gardener to J. B. Finley, Esq., of Saratoga. Mr. Crossman, of Rochester, sent a good collection, but they never reached the show grounds.

We must say for the Superintendent of the Floral tent, Mr. A. F. Chatfield, of Albany, that he did all in his power for the convenience of exhibitors, and the general good of exhibitors. The fault was not his that arrangements were not more satisfactory.

THE ROSY HISPA AND THE DROP-WORM.*

In the latter part of the month of August we were traveling through Jefferson county, N. Y., and observed through the whole country that the Basswood trees, which are very abundant in that part of the country, looked as brown and dry as though some terrible blight had struck them all dead. On examination we found this appearance was owing to the leaves being all devoured, leaving but the skeleton of fibres; not a leaf had escaped throughout the immense forests which we passed on a journey of some thirty miles or more. The insects had mostly disappeared, but after a long and eager search we found one tree, the leaves of which, though reduced to skeletons, were yet thickly covered with the insects. We immediately sent specimens to Prof. Harris, requesting such information as he possessed respecting them, and he has very kindly complied. Insects that appear in such swarms, and commit such havoc, should be known. The other insect, the "Drop-worm," described by Prof. Harris below, was sent us from Tennessee by Mr. Robert Meston.

* From the Horticulturist for October.

Among the leaf-beetles that are injurious to vegetation are those belonging to the tribe called HISPADÆ. Such are the little insects which you lately sent me, which you found to have destroyed the foliage of the Basswood, or American Linden (*Tilia Americana*), in Jefferson county, N. Y. A variety of the same insect attacks the leaves of the White Oak, and occasionally those of the Apple tree, also. These leaf-beetles are described in the second edition of my Treatise, pp. 105 to 107; and a more full account of them, with figures of the grub and chrysalis, will be found in the first volume of the *Boston Journal of Natural History*, pp. 141 to 151.

The day before your letter came to hand, I found one of these beetles, which had just emerged from a leaf of the Linden, and I saw several other leaves on the same tree that had been eaten by insects of this kind. In the summer of 1851 the White Oaks in some parts of Long Island suffered very much from their attacks; and, with this communication, you will receive one of the leaves, showing in what way and to what extent they were affected.*

Your insect is the Rosy Hispa, or *Hispa rosea*, of WEBER, otherwise called *Hispa quadrata* by FABRICIUS, and *Hispa marginata* by SAY. The accompanying rude and very magnified sketch will give an idea of the form of this pretty leaf-beetle, and the line at the side of it indicates its natural size, which rarely exceeds one-fifth of an inch in length. Its body is light red above, ornamented with short blood-red lines, and is mostly blackish beneath. The antennæ are black, and the legs are reddish-yellow. The thorax is rough with small indentations, or punctures, as they are called; the wing-covers are notched around the outer edges, have raised ribs upon them, and deep punctures in the intervals. The Rosy Hispa may be found abundantly in May and June on the leaves of the Shad-bush, or *Amelanchier Canadensis*, and on other shrubs of the same family, the leaves of which it devours. The variety which inhabits the Oak differs in being of a reddish yellow color, ornamented with blackish-red lines. This difference may be occasioned by its food, or by other causes of an accidental nature.

The female Hispa deposits her eggs, for the most part, singly, on the upper surface of the leaves. These eggs are glued fast to the leaves, and are covered with rough, blackish crust. The grubs, hatched from the eggs, immediately penetrate into the pulpy substance of the leaf, which they devour, leaving the cuticle, or skin of the leaf, both above and beneath, untouched. The part of the leaf thus, as it were, undermined, becomes dry and brown, and through the semi-transparent cuticle, when held between the eye and the light, the grub may be seen in its burrow. The grub comes to its growth toward the end of July, and then measures from one-fifth to one-quarter of an inch in length. It is somewhat flattened, and tapers toward the hinder extremity. Its color is yellowish-white, except the head, the first segment, and the tail, which are blackish. It has six legs, a pair beneath the first, second, and third segments; and on each of the remaining segments, both above and beneath, except the last, there is a transverse horny spot, which is rough, like a rasp. The sides of these segments, also, are prominent, and are surmounted each with a little brownish tubercle, or wart. Early in August the grub is transformed to a chrysalis within its retreat. The chrysalis, which is whitish at first, finally becomes brown. Like the grub, the sides of its body are prominent, and there are transverse rasps on the back and belly. In about one week afterward the insect casts off its pupa skin, and comes out a fully formed beetle, which has only to force a passage through the thin cuticle of the leaf in order to escape into the open air. The insect probably passes the winter in the beetle form in some place of concealment. Such is briefly a history of the transformations of this little *Hispa*.

The caterpillars, which, together with their cocoons, you sent to me, with the information that they were very destructive to the Arbor Vitæ, Cedar, and other resinous plants in Tennessee, are drop-worms, or basket-worms, referred to on page 319 of my Treatise. To their destructive powers I can testify from my own sorrowful experience; a fine Arbor Vitæ tree, on which I had placed, in May, 1850, some of the cocoons received during the previous autumn from Philadelphia, not having yet recovered from the effects of the ravages of the insects, though the latter were limited to one summer. These drop-worms are exceedingly curious and interesting in all their habits and transformations, the history of which might form the subject of a long memoir. But neither time nor space will permit me to offer any more than a very short sketch of their history, which is drawn up from notes written in the years 1849 and 1850, when I had a colony of the living insects in keeping.

These insects inhabit the Swamp Cedar (*Cupressus Thyoides*), Arbor Vitæ (*Thuya occidentalis*), Larch (*Larix Americana*), and Hemlock (*Abies Canadensis*), with other resinous trees; but occasionally they attack the Linden, the Maple, and even fruit trees. They are common in the Middle and Southern States, and probably most of the Western States also; but hitherto they have not been discovered in New England. They belong to Mr. GUILDING's American genus *Oiketicus*; and, as they do not seem to have received a scientific name, I shall venture to give them that of *Oiketicus coniferarum*, from their preference to the trees of the cone-bearing tribe. The species is probably the same as the one noticed by my lamented friend, the late Mr. EDWARD DOUBLEDAY, in *Newman's Entomologist*, No. 7, pp. 97–98; but the male insect does not agree with the figure, copied from one

* Quite similar to the manner in which the Basswood leaves are eaten.—ED.

of Abbot's drawings in the same work, nor does it correspond any better to Guilding's figure of *Oiketicus McCayi*, though about the same size.

As soon as the drop-worms are hatched, they make and conceal themselves in little silken cases, open at each end, and covered externally with bits of leaves, twigs, &c. These cases are enlarged, as the insect increases in size, by the addition of more materials within and without, and finally become oblong oval pods, with long somewhat cylindrical extremities. The inhabitant carries its house about on its back, as a snail does its shell, when it is moving and feeding; fastens it by a few threads when it wishes to rest; or lets it drop by a thread when it wishes to descend from one branch to another: hence, in Philadelphia, where these insects are abundant, they have acquired the name of drop-worms. These worms attain their full size by the middle of September, and then fasten the upper end of their cases to a twig of the tree by a strong silken band. The weight of the case, with its elasticity, closes the upper orifice, from which the worm has been accustomed to protrude its head and fore legs when feeding; the insect then turns round within its pod, so as to direct its head toward the lower cylindrical orifice, and thus awaits its change to a chrysalis. The worms which produce the female insects are much larger than those of the males, and there is the same difference in the size of their pods and of their chrysalids. Female worms attain the length of one inch and a half, those of the males only about one inch. The head and fore part of the body are white, spotted with black; the rest of the body is livid or blackish. The first three segments are each provided with a pair of stout jointed claw-like legs. The tail and four intermediate segments are furnished with a pair of very short holders, or prop-legs. The male chrysalis is a little more than six-tenths of an inch long, of a dark brown color, and exhibits the sheaths of the wings, and limbs of the future moth, which escapes from it toward the end of September or early in October, immediately before which the chrysalis forces itself half way out of the lower end of its case. The female chrysalis is nine-tenths of an inch long, or more, of the same color as that of the males, but without any vestige of wing-sheaths or limbs. There is a prominent ridge over the fore part of the body. When the included female is matured, the skin of the chrysalis splits at the ridge, so as to form an opening in the shape of the letter T, and through this opening the approaches of the male moth are made, the female remaining all the while not only enclosed in her pod, but also encased in the skin of the chrysalis. In this skin, also, she lays her numerous eggs, gradually withdrawing her emaciated body as she fills the pupa skin, and finally closing the upper part of the skin with a thick layer of fawn-colored down, stripped from her own body. Having finished her labors, she crawls out of the pod, entirely shriveled up, drops off and dies, or more rarely perishes at the mouth of the pod. She is found to be entirely destitute of wings, and her legs are extremely minute, and resemble little tubercles. The male moth on the contrary, is fully provided with wings and limbs. Its body, which measures rather more than half an inch in length, is covered with long blackish-brown down. Its wings are semi-transparent, and are very scantily clothed with blackish scales, which are thickest on the margins and veins. The white spot, represented by Mr. Abbot on the fore wings of his figure, is entirely wanting in all the males that I have seen. The antennæ are curved at the tips, and are doubly feathered from the base to beyond the middle. The tongue is not visible. The wings expand one inch and one-tenth, or more. The male moths are very impatient of confinement, and keep in constant motion, which renders it very difficult to obtain perfect or unrubbed specimens. The eggs remain secure in the shell of the skin of the female chrysalis, enclosed in the suspended pods, through the winter, and are hatched in the spring when the trees are well clothed with leaves, upon which the little worms, having left the pods, immediately disappear, and each one begins to cover its tender body with a silken and leafy case. The figure represents one of the pods or cocoons, suspended by a twig, when the insect has prepared for its final transformation; also a male moth, both of the natural size.

The Late Professor Adrien de Jussieu.—Advices from Paris mention the decease of this distinguished botanist, upon whom the mantle of his great ancestors may be said to have fallen. Among the most conscientious and exact of systematical writers he also ranked high as a physiologist, as his well known elementary work has shown the world. For many years his health had been delicate, and of late had been deplorable. By his decease a vacancy occurs in the President's chair of the French Institute, in that of Professor of Rural Botany in the *Jarden des Plantes* (which, it is said, will not be filled up), and among the twenty foreign members of the Horticultural Society of London.—*J. L., in London Gardeners' Chronicle.*

Editor's Table.

THE STATE FAIRS.—The State Fairs the present year have generally been well attended, and, as a general thing, the exhibitions have not been as good as in former years. This was the case in Ohio and in this State. The almost incessant rain did much to injure the Fairs, especially the Vermont State Fair, which, we learn, was almost a failure in consequence. At the New York Fair at Saratoga the exhibition of stock was excellent, as well as of fruit; but in other respects the Fair did not equal many of its predecessors.

A few fine wool sheep were shown. In quality and numbers, the Fairs at Rochester and Utica were much the best. F. W. DEAN, West Cornwall Vt., exhibited some good Spanish ewes, and a very large Spanish Merino buck. JOSEPH HASWELL, Hoosic, N. Y., also showed some fine ewes of this breed. French Merinos were poorly represented. G. W. McKEE, Cambridge, Washington county, exhibited three very superior bucks. A two year old, bought of Maj. SANFORD, Vt., was a perfect beauty. A first rate three year old from JEWETT, Vt.; another, a yearling, was a very good sheep. FELIX WEEDEN, Preston Hollow, Albany county, showed a good buck and ewe.

The mutton sheep were well represented—not so many from Canada as in former shows, but from our own State. We are sorry to miss the fine animals of our Canadian brethren, but at the same time we are very glad to see that New York farmers are entering with their usual energy and go-a-headativeness into the breeding of superior mutton sheep.

Of Leicesters, J. A. and S. N. RATHBONE showed some very fine animals. HUNGERFORD and BRODIE, Jefferson county, were the largest exhibitors. Seven yearling ewes, recently imported, are excellent, as are also the six two year old ewes which took the first prize as yearlings last year. Their imported buck did not please us, but the yearling bucks are first rate—one of them is very superior. One fat ewe—a beauty—was sold for $30 to go to Kentucky. One of the buck lambs shown bids fair to be a fine fellow.

South-Downs were shown in fine perfection. L. G. MORRIS, Mt. Fordham, N. Y., exhibited a recently imported buck from JONAS WEBB, which for one of his stock, struck us as rather coarse, but it had a corresponding degree of strengh and mascularity, and is on the whole an animal of rare merit. Z. B. WAKEMAN, of Herkimer, exhibited a large number of superior South-Downs.

There were but seven animals of the Cotswold and New Oxfordshire breeds exhibited, at least that we saw. E. GAZLEY, Clinton, showed four splendid bucks of the Cotswold breed. WYANT and YOUNGHAMS, Sand Lake, Rensselaer county, exhibited three New Oxfordshire sheep, which we took for good Cotswolds.

Swine.—In this department the exhibition has never been excelled. L. G. MORRIS showed some splendid Berkshires; quite a number of FISHER HOBBS' Black Essex, and some very superior Suffolks. Those who have a prejudice against color will not like the Essex so well as the Suffolks or Middlesex; they are nevertheless a remarkable breed, fatting with great rapidity and maturing early. Suffolks were well and largely represented. This breed evidently stands high in public estimation. Beside the fine animals of L. G. MORRIS, NELSON RICHARDS, Vergennes, Vt., showed a superior two year old boar of the Stickney breed. LE ROY MOWRY, Union Village, Washington county, and ZOAR RIDER, Washington county, exhibited good two year old boars.—Other exhibitors deserve mention, but our space forbids. SETH WHALEN, West Milton, Saratoga county, exhibited nine very good shoats of the White Leicester breed. Z. B. WAKEMAN, Herkimer, showed a boar, a cross of the celebrated Leicester and Berkshire breeds, of enormous size. B. DAVIS, Vernon, also exhibited a very good six months old boar and sow. There were no Chinese, Middlesex, or Yorkshire pigs exhibited.

Horses.—Owing to the number of Black Hawks brought from Vermont and other States, the show of horses was the best ever witnessed in this State. The old original Black Hawk, twenty-two years old, was on the ground, as active and sprightly and at the same time more compact and powerful than many of his colts. This breed, unsurpassed in the world, is exposed to deterioration from the go-a-head tendencies of the age. The mares and colts were a sorry set. Many mares were exhibited that had evidently been selected as breeders, because they were good for nothing else. We suppose the object of the exhibitors was to show how good a colt a poor mare might be made to produce.

Cattle.—The show of Short-horns, though not large, was never so good in quality at any previous Fair. Morris and Becar, of New York, exhibited twenty-eight head. Their recently imported four year old bull, "Balco" (not shown for a premium), is one of the finest animals we ever saw. Many of the Short-horns exhibited by the same gentlemen are bad in the crops—especially is this true of the "Marquis of Carribus." "Balco," "Songstress," "Beauty," and other recently imported animals will do much to correct this deficiency. Geo. Vail showed five head—for sale. E. J. Alden, Boston, showed a very good three year old bull. David Calkins, China, Wyoming county, exhibited a very good four year old bull. Mr. Wm. Bullock, Bethlehem, Albany county, showed some fair animals. Wood, Converse, & Co., Woodville, Jefferson county, showed a first rate four year old bull.

Devons were not so well or so numerously represented as at Rochester. There were, however, some splendid animals exhibited. Those of W. G. Faile, West Farms, and of the Messrs. Wainwright, Rhinebeck, particularly pleased us. L. G. Morris had some very good animals. J. B. Tuckerman, Richfield, Otsego county, showed a very good two year old bull. Geo. Vail, Troy, showed some good animals, but not quite what we should expect from so celebrated and skillful a breeder.

The largest breeder of Herefords in the State, Wm. H. Sotham, Piffard, Livingston county, did not exhibit in consequence of the points of excellence adopted by the Society. Nevertheless there was a good show, indicating that this breed is looking up. E. Corning, Jr., Albany, showed fourteen very superior animals—a three year old bull, a yearling bull, and two cows particularly pleased us. Remington & Bowen, Sennett, Cayuga county, exhibited some first rate animals, bought of Mr. Sotham.

For the shambles and the dairy the Ayshire breed is unsurpassed, yet it was poorly represented. E. P. Prentice, Albany, and Hungerford & Brodie, Jefferson county, were about the only exhibitors. The animals of Mr. Prentice are well known—they have few superiors. The other gentlemen showed a two year old bull, an imported and very superior animal, and also a very pretty heifer, with the milking points well developed.

In grade animals there was rather a meager show. There was, however, some very fair animals exhibited. There was a tolerably good herd of fat cattle from Kentucky on the ground.—Working oxen were well represented, and what is better were *well trained*. Elon Sheldon, Sennett, showed fourteen yoke.

Agricultural Fairs in Massachusetts.—So far as our observations have extended, and we have witnessed agricultural exhibitions in a number of States, Massachusetts farmers excel all others in the art and skill with which they manage these rural festivals. With them a Fair is anything but *fair* without a good public dinner, at which farmers and their wives, sons and daughters, sit down by hundreds at several tables in a magnificent hall, where food for the body and food for the mind are served up in profusion, and all are filled, joyous, instructed, and happy. This practice has a most auspicious influence on the family circle. It brings fathers, mothers, brothers, and sisters together from all parts of a county, all of whom are polished, to a certain extent, by this social attrition, which is too much denied to the comparatively isolated families in rural districts. They have very few holidays, and fewer social advantages than fall to the lot of the residents of villages and cities: hence it is eminently wise and fitting that our annual Fairs should be made schools for social improvement, where new and valuable acquaintances may be formed, old friendships rejuvenated, and all sympathise more cordially and earnestly with whatever is good in civilized communities. Man should not degrade himself into a mere machine for tilling the ground, with no higher objects in this life than to feed a mortal body, and lay up gold and silver for heirs to dissipate in idleness and extravagance. Cultivation, in its broadest and best sense, needs to be fostered by the owners of American soil. Many a farmer, and many a farmer's wife, have felt the want of that ease, self-possession, and happy polish, which inferior minds often possess by reason of having mingled more in cultivated society. Constant isolation on the farm or elsewhere has an unhappy, an anti-humanising influence on one of the strongest natural functions of the human heart. By nature we are social beings; and this nature needs proper development in all woman-born.

This train of thought and remark has been suggested by attending a County Fair at Greenfield, in Massachusetts, at which every thing of a social and intellectual character excited our admiration. The President of the Society, the Hon. Mr. Cushman, was perfectly at home at the dinner table, where plates were provided for three hundred guests. We took no minutes of

the many good things that were said by Mr. C. and the gentlemen present. All, however, felt happy that so many ladies graced and honored the festival by their presence; while the ladies, in turn, evinced equal pleasure in listening to the spirited and important discussions on rural topics appropriate to the occasion, carried on with animation, and in the most amiable temper. There was no wine or other intoxicating beverage present; and we are confident there was none the less wit on that account. That better and purer spirit than alcohol in any of its forms — the spirit of good feeling and good will among farmers and all others, is what we desire to commend, and thank the men of Massachusetts for their labors to cultivate.

PROVINCIAL FAIR OF CANADA WEST.—This Fair took place at Hamilton October 5th, 6th, 7th, and 8th. There were not so many entries as at Toronto last year, yet, on the whole, it was the best Fair the Society has ever had. The show of Durham and Ayrshire cattle, Leicester sheep, and Yorkshire hogs, was uncommonly large and good. The show of fruit and vegetables was remarkably good, and they were arranged in admirable taste. In implements the show was good, especially of Canadian manufacture. There were many English and Scotch implements, particularly scarifiers, grubbers, subsoil plows, and cultivators. J. RAPALJE & Co., of Rochester, exhibited a very large number of Yankee implements, from thermometer churns to reaping machines. The attendance was unusually large; 20,000 shilling tickets were sold on Thursday.

The crop of wheat has been unusually good in Canada this year, and it is now nearly as high as with us; so that the farmers are enjoying unwonted prosperity, and spent their money during the Fair like princes.

THE SCIENCE OF BEE-CULTURE.—The culture of bees, and the economical production of honey, are objects of considerable interest to many of our readers. To manage bees successfully, one needs an intimate acquaintance with their wants, habits, capabilities, and natural enemies. They suffer mainly from a deficiency of suitable food, from bad hives that subject the colony to all extremes of heat in summer, and cold in winter, and from the depredations of moths, mice, and robber-bees. Independently of the value of pure honey which may be obtained in any desirable quantities, bees deserve our care and study as objects illustrative of industry, frugality, and foresight, in providing a rich store of delicious food long in advance of its needful consumption.

Mr. LANGSTROTH, of Greenfield, Mass., whose apiary we recently visited, is the most scientific and successful cultivator of this valuable insect we have ever seen. A clergyman of sufficient leisure to make extensive observations, a gentleman of education, and familiar with the best works of European and American authors, he has brought to the task all the devotion, singleness of purpose, and enthusiasm of the genuine naturalist; and, consequently, has produced a Manual on this branch of rural economy alike distinguished for originality of thought and research, and the directness and simplicity of all its teachings. Our numerous duties have not permitted us to study Mr. L.'s book of 384 pages devoted to the elucidation of the natural history of the honey-bee, and the best methods of treating them for profit, as we intend to study it; but we have read enough to warrant us in pronouncing it worthy of a place in every farmer's and gardener's library in the United States. Our opportunities for seeing patent bee hives during four years employment in the Patent office and elsewhere have been ample, and we do not hesitate to give the preference to that of the Rev. Mr. LANGSTROTH over all others. Without cutting or breaking the comb in the least, each comb can be taken out of the hive at any time and not seriously disturb the bees, or affect in the least the honey that remains. Tumblers and larger glass vessels, as we have before seen elsewhere, are filled with honey by the bees by placing them over holes in the tops of the hives, and covering the whole with an outside case. Mr. L. uses double hives—a great advantage, for in winter the space between the two is filled with fine straw, chaff, or rowen hay, which greatly protects the colony from extreme cold. The sides of the inner hive are mostly of glass, which costs only twenty-five cents a hive. By having glass on the top and four sides of the inner hive, one can see the condition of the bees at any time by simply removing the outer box, on all sides except the bottom. Mr. L., however, exhibited to us a curious "observing hive," invented and used by him to study the domestic economy of bees, in which only one piece of comb is formed, and that is extended between two plates of glass, so that the cells in which the common workers, the drones, and queen bees, and the development of these several members of the family, may be witnessed with the utmost satisfaction.

The queen outlives several generations of her offspring, and what is still more remarkable, a single impregnation made at her first maturity

suffices not merely for the 12,000 or 15,000 eggs she may lay for a single new colony, but for ten or more such broods which she may live to give birth to. In addition to ovaria for the bountiful elaboration of eggs, the queen is provided with a seminal sack in which fertilizing atoms derived from the blood of the drone or male are stored up for use during her life time. Female hornets, wasps, and humble-bees begin their labors in the spring without mates.

As the starting point in bee-culture one should study the anatomy and physiology of the insect, and the laws of animal life generally. With this information, instead of starving to death so many colonies in winter for the want of proper protection from cold, they would be wintered safely on half the honey now consumed, and the balance might be sold or used in the family of the apiarian. Nor is it so difficult, on most farms, to provide bee-pastures as one might imagine. White clover blossoms yield the finest honey; and this is an indigenous plant from Maine to Texas. In the best season for collecting honey two thousand swarms kept at one apiary in Germany have all found an abundance of honey. Most Americans have yet to learn how to use the honey bee to the best advantage.

THE HORTICULTURIST AND JOURNAL OF RURAL ART AND RURAL TASTE.—This valuable Horticultural Journal was never better, and never better appreciated than during the present year. Although it may have lost some of that exquisite taste that characterized the writings of the lamented DOWNING, it is far more practical, and consequently more useful, and exactly meets the growing wants of the thousands who are engaged in the culture of fruit. Every page is filled with practical matter, of the utmost importance to fruit growers—its illustrations are beautiful—the paper and printing equal to our best monthlies—and yet, we are sorry to say, some of these monthlies, purchased and read for *amusement*, circulate by hundreds of thousands, while really valuable and equally beautiful journals, like the *Horticulturist*, only number a few thousands. Farmers, these things ought not to be so, and we speak them to your shame. Let all who cultivate fruit or flowers—all those who design to improve their homes—send for the *Horticulturist*. It merits, and should receive, a large circulation. Edited by P. BARRY. Published by JAMES VICK, JR., Rochester, N. Y., at $2 per year. Specimen numbers sent to all who apply by mail. A new volume will commence on the first of January next. Let all who want the *Horticulturist* for next year send in their orders early. See page 358.

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A new edition of this popular work has recently been issued, including twenty-seven new authors not in the former edition—making, in all, one hundred and two authors, of each of whom there is a short biography and selections from their most popular productions in prose or verse.—It contains all the most prominent writers from 1722 to 1837, and is a valuable work for every reader of the English language. Published by E. C. & J. BIDDLE, No. 6 S. Fifth street, Philadelphia.

Inquiries and Answers.

(J. RANDALL, Masonville, N. Y.) The shrub of which you sent specimens of the leaves, is the Mountain Sumach (*Rhus copallina.*) It is found in dry, hilly situations in various parts of the United States and Canada.

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FOR SALE, a number of pairs of genuine Black Shanghæ Chickens, strongly marked, and embracing all the fine points of Chinese fowls. No one wishing a superior breed of fowls for laying or for the table, will be disappointed by procuring this variety. Also, a few pairs of the celebrated Brahma Pootra stock.

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THE only remedy ever offered to the public that has never failed to cure, when directions are followed, is M'Lane's Liver Pill. It has been several years before the public, and has been introduced in all sections of the Union. Where it has been used, it has had the most triumphant success, and has actually driven out of use all other medicines. It has been tried under all the different phases of Hepatis, and has been found equally efficacious in all.

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OF the following kinds and sizes, we can supply to Nurserymen and others to a large amount, and at very low prices:

Norway Spruce Fir, from 8 inches to 6 feet.
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White Pine, from 1 foot to 12 feet.
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Those who wish for any of the above-named articles, can learn our exact prices by addressing us, and stating the number they wish to purchase. To large buyers we make a proper discount. Orders received *early* we can fulfil most perfectly, while if they are *late* we may not be able to do so well by them. D. S. MANLEY & BROTHER.

Buffalo, October 1, 1856.—2t.

PREMIUMS FOR 1854.

THE Proprietor of the GENESEE FARMER, encouraged by the liberal support long extended to this journal by its friends and patrons, announces that the FIFTEENTH VOLUME of the present series, to commence in January, 1854, will contain a quarter more reading matter than any of its predecessors, and be otherwise much improved, without any increase in price.

To enlarge the usefulness by extending the circulation of the GENESEE FARMER, the undersigned will pay the following premiums on subscriptions to his next volume:

1. FIFTY DOLLARS, in CASH, to the person who shall procure the largest number of subscribers in any County or District in the United States or Canadas, at the club prices, before the 1st day of April next.
2. FORTY DOLLARS in CASH to the one who shall procure the second largest list as above.
3. THIRTY DOLLARS, in CASH, to the one procuring the third largest list.
4. TWENTY DOLLARS, in CASH, to the one procuring the fourth largest list.
5. TEN DOLLARS, in CASH, to the one procuring the fifth largest list.

In order to reward every one of the friends of the GENESEE FARMER for his exertions in its behalf, we will give to those not entitled to either of the above premiums, the following Books, free of postage, or Extra Papers, as may be preferred:

1. To every person who sends SIXTEEN subscribers, at the club terms of thirty-seven cents each, one extra copy of the Farmer.
2. To every person sending for TWENTY-FOUR copies, as above, any Agricultural Book valued at fifty cents, or two extra copies of the Farmer.
3. To every person ordering THIRTY-TWO copies, any Agricultural Book worth seventy-five cents, or three extra copies of the Farmer.
4. For FORTY, any Agricultural Book valued at $1, or four extra copies of the Farmer.
5. For FORTY-EIGHT, any Agricultural Book worth $1.25, or five extra copies.

For larger numbers, books or papers given in the same proportion. To save cost to our friends, we pre-pay postage on all books sent as premiums. Persons entitled will please state whether they wish books or extra papers, and make their selection when they send orders, if they desire books; or if they have not obtained as many subscribers as they intend to, we will delay sending until the club is full, if so requested. We do not require that all the papers of a club should be sent to one Post Office. If necessary for the convenience of subscribers, we are willing to send to as many different Offices as there are members of the club. We write the names on each paper, when a number are sent to the same Office, if so desired; but when convenient, Post-Masters would confer a favor by having the whole number ordered at their own Office, sent to their own address.

As all subscriptions commence anew with the year, places where the FARMER was never before taken will stand an equal chance in the competition for premiums.

BACK VOLUMES of the Farmer will be furnished, if desired, and counted the same as new subscribers. We shall keep a correct account of the subscribers sent by each person, and in the May number we shall announce the premiums.

☞ Specimen numbers, show-bills, &c., sent to all post-paying applicants. All letters must be paid or free. Subscription money, if properly enclosed, may be mailed at our risk.

The volume for 1854 will be printed on good paper, with new type bought expressly for it. A gentleman, graduate of the University of Vienna, who is familiar with the languages of those nations in which the science of agriculture is most cultivated, will aid us in translating for the FARMER whatever can instruct or interest its readers. This gentleman is by profession a Civil Engineer and Architect—branches of knowledge intimately connected with the progress of rural arts and sciences. The general character of our paper is thus pithily stated by the Hon. MARSHALL P. WILDER, President of the Massachusetts Board of Agriculture, and of the United States Horticultural and Agricultural Societies, in a letter now on our table, which closes as follows:

"I have always had the GENESEE FARMER. *It is, without favor or affectation, the best paper in the country.* MARSHALL P. WILDER."

As our club price to each subscriber is only thirty-seven cents a year, no matter how many other agricultural journals one may take, to patronise the FARMER can not impoverish him.

DANIEL LEE.

THE HORTICULTURIST,

And Journal of Rural Art and Rural Taste.

EDITED BY P. BARRY, AUTHOR OF THE "FRUIT GARDEN."

THE HORTICULTURIST, as its name implies, is devoted to Horticulture and its kindred arts, Rural Architecture and Landscape Gardening, and will keep its readers advised of every thing new on the subject, either in Europe or America. It is a Monthly Journal of forty-eight pages of reading matter, beautifully printed on the finest paper, and elegantly illustrated. In addition to numerous wood engravings, each number contains a full page engraving on stone, of some new, rare, and valuable fruit or flower, and is at least one of the most beautiful Journals in the country; and the publisher will not rest satisfied until the HORTICULTURIST, AND JOURNAL OF RURAL ART AND RURAL TASTE, is acknowledged to be the best Horticultural Journal in the world. The honor of AMERICAN HORTICULTURE requires this—interest and patriotism alike demand it. With proper support from the Horticulturists of the country, I have full confidence this point can be reached. To accomplish this desirable end, the publisher has determined to devote his whole time and attention to this work, and his connection with the *Genesee Farmer* as one of its editors (and in reality its publisher), which post he has filled since 1849, will therefore cease with the present volume.

Mr. BARRY, so long and so favorably known as the Horticultural editor of the *Genesee Farmer*, is the editor of this work; and those who wish to continue to receive the benefit of his valuable instructions in Fruit Growing, can do so by subscribing for the HORTICULTURIST, and in no other way.

The new volume will commence on the first of January. The January number will be ready to deliver to subscribers by the 10th or 12th of December.

We shall take pleasure in sending specimen numbers to all who desire to inspect them, or show them to their friends.

Many would do themselves and their neighbors good service by becoming agents, and obtaining subscribers among their friends and neighbors. No man who raises Fruit or Trees can afford to do without the Horticulturist. Agents will be allowed a commission of 25 per cent.

TERMS—$2 per year, in advance.

JAMES VICK, JR., Publisher, Rochester, N. Y.

☞ We subjoin a few notices by the press, showing the estimation in which the work is held by our editorial brethren:

We are glad the work has fallen into such excellent hands.—*Louisville Journal.*

Its contents are spirited and various, the selections judicious, the illustrations elaborate.—*New York Daily Times.*

A standard work of authority upon all subjects discussed or explained in it.—*Vicksburg Whig.*

There is no work in this country of greater value to the cultivator of fruits.—*Inquirer, Portland, Me.*

We congratulate the public on having so valuable a periodical as the Horticulturist within their reach.—*New York Day Book.*

This periodical is got up in excellent style, and well sustains its former reputation under its present management. *Middlebury (Vt.) Register.*

We feel that we are doing our readers a real service when we urge them to subscribe for this invaluable monthly.—*Weekly Democratic Press, Chicago.*

It is well got up; its articles able, various, and appropriate.—*Geneva Courier.*

The plates alone are worth the year's subscription. The letter press is of a highly instructive character, and embraces a variety of topics. None who have a taste for the beautiful in nature should be without such a valuable publication.—*Hamilton (C. W.) Spectator.*

There is substantial profit as well as pleasure in cultivating taste in buildings, yards, gardens, &c., and the subscription price would be capital well invested by those who will attend to the contents of the Horticulturist.—*Daily Courier, Zanesville, Ohio.*

We are quite satisfied with the work, and are inclined to believe that, to the mass of readers, the work will be even more acceptible than it was under the charge of the accomplished Downing. We recommend the work cordially to the patronage of our friends and the public.—*Massachusetts Spy.*

AGRCULTURAL IMPLEMENT MANUFACTORY,

CORNER OF CAROLINE & THIRD STREET,

BUFFALO, N. Y.

Pitts' Patent Separator—Improved Double Pinion Horse Power—Pitts' Corn & Cob Mills, &c.

I HEREBY give notice that since the extension of the patent right on my Machine for Threshing and Cleaning Grain, I have removed to Buffalo, N. Y., where I have permantly located, and erected a large establishment for the future manufacture of the above Machines.

The Separator has been enlarged, improved, and rendered more permanent and durable in all its parts, while the Horse Power for strength, ease, durability and cheapness of repair is not surpassed by any in the United States. This Power is warranted to stand the full strength of eight horses—also to give as much effective or useful power when driven by one or two horses as any other Horse Power, whether constructed on the endless chain or lever principle. It was put on trial at the great exhibition of Horse Powers and Threshing Machines at Geneva, July last, 1852, where it received the New York State Agricultural Society's First Premium "for the best Horse Power for general purposes." The Separator, at the same trial, also received the Society's First Premium.

My Machines will thresh and clean from three to five hundred bushels of wheat per day, and other grain in proportion.

Two hundred of the above Machines are for sale at the Agricultural Works of the subscriber in this city, all warranted to be a better article than can be purchased at any other shop, and if they do not prove on trial to be so, I will take them off the hands of the purchasers at the price they may pay me for them.

I further notify all persons who are purchasing Horse Powers and Separators to be used in California or Oregon, that I will hold them accountable for any infringmants of the rights secured to me by letters patent in the above Machines, as I am manufacturing a Horse Power and Separator expressly designed for that section.

All orders for the above Machines hereafter addressed to JOHN A. PITTS, Buffalo, N. Y., will receive prompt attention.

JOHN A. PITTS,
May, 1853—tf. Buffalo, N. Y.

French Zinc Paint.

THIS new and beautiful article of Paint is now offered to the trade and public, ground in prepared linseed oil, for the first time in this country. It has been used successfully in France for the last five years, where it has superseded white Lead as a paint.

The French Zinc when properly prepared and used, makes the most brilliant and durable white in use, and is entirely free from all poisonous qualities.

The French Zinc is not more expensive than white lead, and is prepared in such a manner that it requires no farther preparation for use, than to thin it with Turpentine or raw Oil to the consistency of white lead paint.

The French Zinc is very much whiter, and has a better body, than the New Jersey Zinc.

The French Zinc is offered dry, and prepared as above, in quantities to suit purchasers, at the Manufacturer's Depot, No. 17 Buffalo st., Rochester, N. Y.

July, 1852, M. F. REYNOLDS.

Superphosphate.

NO expense has been spared in the combination of this most fertilizing manure, which contains all the nutritive properties of all plants. It is superior to most of the articles offered for sale under the same name, and is inferior to none, although sold at a much lower price. Put up in bags at $40 per ton of 2000 lbs., cash.

Office of the New York Superphosphate Manufacturing Company, No. 159 West street, New York.

VICTOR E. KNOWLES, Agent.

September 1, 1851.—8t.

BUFFALO NURSERY.

D. S. MANLEY & BROTHER, ...PROPRIETORS.

Situated on Main Street, two miles above the American Hotel.

WE wish to call the attention of the public to our Nursery of FRUIT AND ORNAMENTAL TREES, SHRUBS, AND PLANTS, of all that is grown in the best establishments in the country. Persons wishing to buy any of the articles named below, can do no better than to buy of us.

Standard Apples, Pears, Cherries, Plums, Peaches, of all the best varieties—fine trees, from one to five years old.

Dwarf Apples, worked on Paradise and Doucain stocks.

Dwarf Pear Trees, worked on Angers Quince stocks, of all the desirable kinds. Trees from one to three years old can be furnished by the hundred or by the thousand.

Quinces—Good strong plants, in any quantity.

Hardy Grapes—Plants of all the finest varieties, of one, two, and three years of age.

Foreign Grapes—A very good selection.

Currants, of all the new and old kinds—a very fine stock of one and two year old plants.

Raspberries, of the best kinds, and very good plants, in any quantity.

Gooseberries—A first rate assortment of varieties, and capital plants.

Strawberries—An excellent selection of the best sorts—a very general assortment.

Rhubarb, or Pie Plant—A good stock of Tobolsk, Victoria, Downing's Colossal, Giant Hybrid, Wisconsin Mammoth, &c.

Asparagus—Good one and two year old plants.

Deciduous Ornamental Trees—We have a fine stock, consisting of the best of European, American, and Asiatic kinds.

Evergreen Trees—Perhaps the most excellent and desirable stock in the country for size and shape. Trees from six inches to ten feet in height, we can furnish, of many kinds.

Ornamental Shrubs—We have a very large stock of Ornamental Shrubs, and can supply most any quantity, of any variety, and the plants are very fine indeed.

Evergreen Shrubs—Not a large but an excellent stock, consisting of such varieties as are found by experience to be desirable in this climate.

Climbing Shrubs—The utmost pains have been taken to propogate all of the varieties of Climbing Shrubs which succeed in this latitude, and now we have an excellent stock.

Roses—A stock of sufficient variety, and of surpassing merit. A stock of over a hundred of the very best kinds cultivated in Europe or America, propogated with the utmost care, and in every way worthy of attention from the most critical in Rose culture.

Dahlias—Our Dahlias—say eighty varieties—are undoubtedly as fine as can be found in this country.

Pæonies—Twenty varieties of these most desirable plants. Several varieties of the splendid CHINESE TREE PÆONIES.

☞ Strangers to our locality are referred to Messrs. Jewett & Thomas' Directory and Map of the city of Buffalo, for the year 1853. Our residence and Nursery Grounds are are exactly delineated on their map.

☞ We furnish Catalogues to all who apply for them. From the extensive increase which we are making in our plantations, it is quite necessary that our business should be done on cash principles. All orders sent to us by mail will receive perfectly prompt attention, and when persons do not know *exactly* what they want they had best leave selections with us. Our *packing* is done in the best manner, and all goods carefully shipped as directed in orders. The strictest care is used to ensure exactness in all our business transactions.

WORMS! WORMS!

VARIOUS theories have been started relative to the origin of intestinal worms, and yet the question is still a vexed one among medical authorities. Of one fact, however, all are informed, and in which all agree—the fatal nature of the influence they exert on children. At this season of the year the attacks of worms are most frequent, as well as most dangerous. We take great pleasure in directing the attention of parents to the Vermifuge of Dr. M'Lane. It is one of the most extraordinary medicines ever introduced to the public, and has never failed of success when tried.

☞ Purchasers will please be careful to ask for Dr. *M'Lane's Celebrated Vermifuge*, and take none else. All other Vermifuges, in comparison are worthless. Dr. McLane's genuine Vermifuge, also his Celebrated Liver Pills, can now be had at all respectable Drug Stores in the United States and Canada.